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ICE & FIRE
Eston Hills Project

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The Eston Hills Rescue Archaeology Project

A Community Project in Redcar & Cleveland, North Yorkshire

Spencer D. Carter, Terri Edwards,
David Errickson and Adam Mead

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2018 Interim Report for Heritage Lottery North-East, Volunteers, Schools, Community Groups and Project Stakeholders

ICE & FIRE
Eston Hills Project

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Site Nomenclature

The following protocols apply to this report and related supplements:

Site code:	EHP17
Test Pit Area / number:	E.g. TP Area A1, A2, etc.; X for surface finds without context
○ Context or Spit number:	E.g. single digit (1) for Test Pit spits (all planned) or four digit (1001) for Trench excavation
△ Small Find number:	Ordinal sequence but not serial or Test Pit / Trench ordered
▽ Lithic Catalogue ID number:	Ordinal sequence prefixed F=Flint/Chert; S=Stone; N=Natural
◇ Environmental Sample:	Ordinal sequence for environmental soil samples and charcoal / carbonized material

Dating Conventions | See timeline chart on page *vii*

Dating nomenclature for British archaeological periods as defined by English Heritage and Historic England:

Post-Medieval	After 1540 cal AD
Late Medieval	1066 – 1540 cal AD
Early Medieval	410 – 1066 cal AD
Roman	43 – 410 cal AD
Iron Age	cal BC 600 – 43 cal AD
Bronze Age	2500 – 600 cal BC
Neolithic	4000 – 2500 cal BC
Mesolithic	c. 10,000 – 4000 cal BC
Palaeolithic	Until c. 10,000 cal BC

BP | Before Present (AD 1950)

KYA | Thousands of Years Ago

Cal BC / AD | Radiocarbon ages calibrated as calendar years based on decay of ^{14}C isotope against atmospheric content absorbed by:

- Living flora
- Collagen in bones and teeth
- Mineral carbonates (and worm casts)
- Measured at 95.4% 1σ probability

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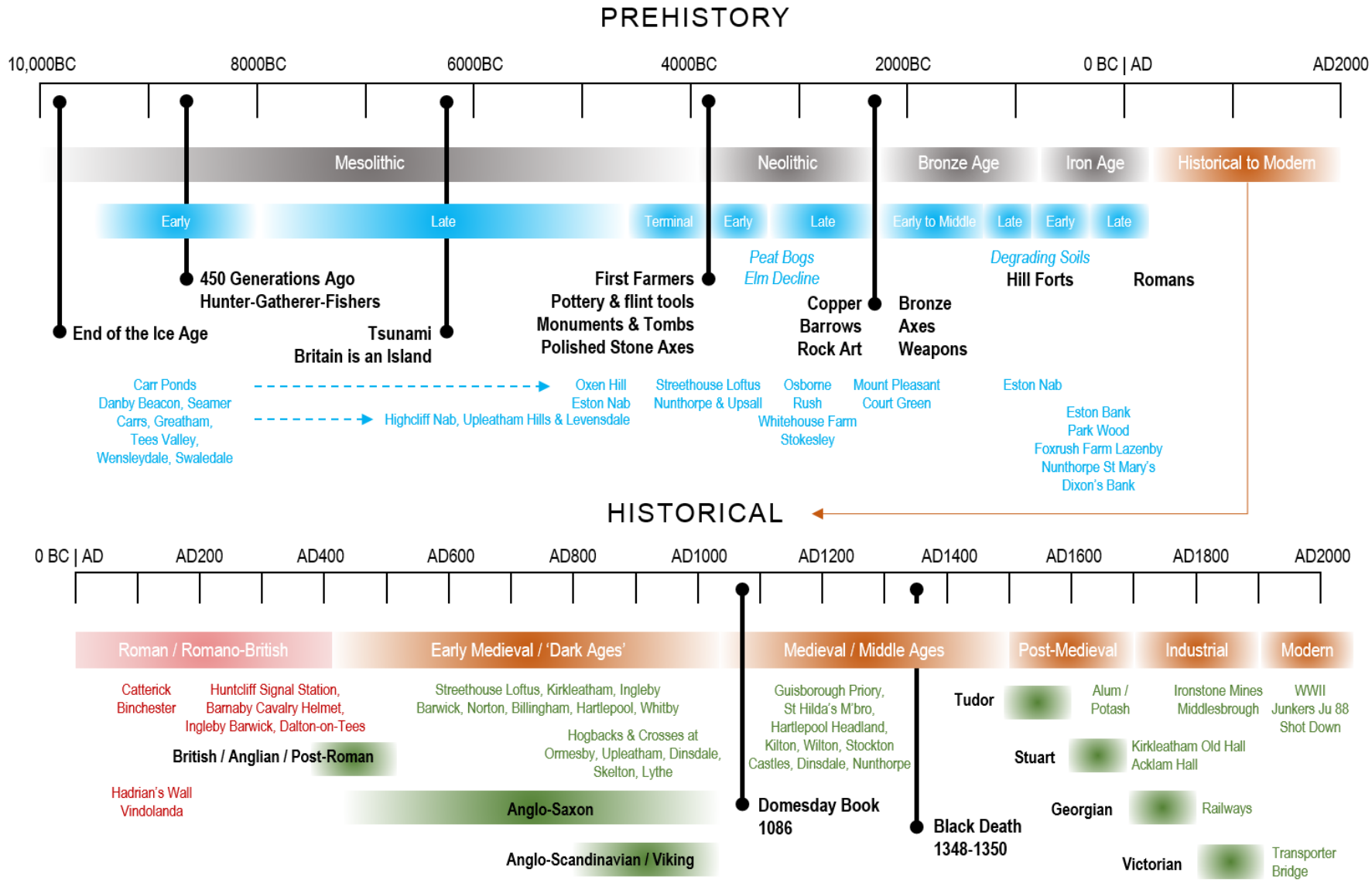
The electronic (online) version of this document contains links to web pages and online resources, whereas the printed hard-copy does not have these within the body text. Links, listed below appear in the document using this symbol and reference number: ↪[1]



Timeline showing the broad outline of periods since the last Ice Age and including a number of sub-periods and alternative period names.

Adapted after Solstice Heritage LLP by kind permission

On Eston Nab

19 November 1904

"A bracing wind from the west, and the atmosphere exceedingly clear. From the west end of Eston Nab I could see right across the flat plains to the upper valley of the Tees where the bold bluffs of the Carboniferous rocks rose, peak behind peak.

East of Normanby quarry several traces of ancient earthworks occur. One presents an embankment with an external ditch beyond which is another slight eminence. The summit of the work was covered with stones of all sizes.

In the soil of Eston Camp I found a large chipped flint. Such finds would probably be numerous if proper excavations could be made. In the fir woods a mottled umber moth (*Hybernia defoliaria*) was seen resting on the grass, whilst at dusk two or three wood owls were flitting round the tree tops and calling now and again.

The flat land bordering the Tees presented a startling aspect at dark from the summit of the Nab. Two trailing serpents of light marked the South Bank and Grangetown roads, whilst near the river electric lights by the hundred could be counted. Above all spread the glow of the furnaces. It is a curious thought that all this intense activity is mainly due to the chemical action of sediments laid down on the sea floor millions of years ago."

− **Frank Elgee** | 1880 – 1944

From: '*A Man of the Moors: Extracts from the Diaries and Letters of Frank Elgee'*, edited by Harriet W. Elgee, forwarded by Geoffrey G. Watson.

1991: Roseberry Publications, Middlesbrough | ISBN 0 9517977 1 9

Matthew Bamborough and Bethany Markham, 2017 supervisors from Durham University. Image: David Errickson

Executive Summary

This is an interim report for an ongoing community-based rescue archaeology project in the Eston Hills, Redcar & Cleveland, North Yorkshire. The Eston Hills area belongs to the community of Teesside as a tranquil haven away from the bustle of modern life. Tragically, the hills are also plagued by acts of vandalism, illegal off roaders – and arson. The fragile moorlands and wetlands, which preserve evidence for past environments and human habitation, are being irreparably damaged.

The project team, led by local resident and Durham University archaeologist Adam Mead, consisted of three archaeologists and six technical specialists. An advisory panel of eight Durham University academics and two freelance technical specialists gave additional expert assistance where necessary.

The local community has been involved at every stage of the project. An excavation team of 41 locally-recruited volunteers helped the project team to conduct a series of exploratory test pits of $1m^2$ over a period of 14 days during the summer of 2017. In addition, Adam Mead gave two talks to primary schools in the vicinity of Eston Hills and a conducted a walk with a third primary school. In order to connect to a broader audience of young people, Adam delivered a talk to the Young Archaeologists' Club at the Oriental Museum, Durham. He also conducted three day-long tours of the Eston Hills site with members of the public. Finally, Adam has delivered a presentation at the *Belief in the North* community archaeology event held at Durham University in order to disseminate the project findings to a wider audience of enthusiasts and experts.

The outreach activities of the project have helped to reconnect the fragile and neglected Eston Hills to its contemporary residents and to potential visitors by showing them the historical and ecological importance of the area. The project was nominated by Dr David Petts of Durham University for the CBA Marsh Awards for Community Archaeology 2017, in the top-three national shortlist. In the final round of adjudications the project received "Highly Commended" recognition for the substantial contribution that it has made to knowledge and wellbeing in both the local and archaeological communities.

Anna Turley, MP for Redcar, with some of our Young Archaeologists' Club volunteers.

Team Sponsors, Advisors and Acknowledgements

Sponsors

Anna Turley MP	MP for Redcar
Funding & Logistics	Heritage Lottery Fund North-East England Teesside Archaeological Society Tees Archaeology AOC Archaeology Group – Geophysics (Alistair Galt) Timevista Archaeology – Lithics and methods Durham University Department of Archaeology Durham University Department of Geography Teesside University Department of Forensic Anthropology Redcar & Cleveland Borough Council

Project Team

Project Director	Adam Mead	Archaeological Services Durham University
Assistant Director 2017	Dr David Errickson	Teesside University, Forensic Anthropology Teesside Archaeological Society
Communications, First Aid & Site Supervisor	Bethany Markham	Durham University, Student
Site Supervisor	Matthew Bamborough	Durham University, Student
Chief Countryside Ranger	Jonathan Green	Redcar & Cleveland Borough Council
Equipment & Surveying	Robin Daniels Rachel Grahame	Tees Archaeology Service
Geophysical Surveying	James Lawton Alistair Galt	AOC Archaeology Group
Aerial drone filming & photography	Clive Winward	Drone pilot and photographer
Video production	Marc Barkman-Astles	Archaeosoup Productions
Lithics Specialist Project Website Project Co-Director 2018	Spencer Carter	TimeVista Archaeology, FSA Scot Honorary Research Fellow, Durham University Archaeology
Project Report Editor	Terri Edwards	Community Archaeology volunteer, Friends of Longovicium, Lanchester, County Durham

Project Advisors

Prof Robin Skeates	Durham University Archaeology Head of Department | Prehistoric Archaeology, Museum Studies, Public Archaeology & Cultural Heritage Management
Prof Peter Rowley-Conwy	Durham University Archaeology | Hunter-Gatherer Archaeology, Neolithic transition to agriculture, Zooarchaeology & Palaeo-environments
Dr Tom Moore	Durham University Archaeology | Iron Age & Geophysics
Dr David Petts	Durham University Archaeology | North-East England Research Group, Early medieval archaeology
Dr Stephanie Piper	Archaeological Services Durham University | Lithics
Dr Ben Roberts	Durham University Archaeology | Bronze Age
Dr Kate Sharpe	Durham University Archaeology | Rock art recording, community archaeology, heritage management & interpretation
Dr Gemma Tully	Durham University Archaeology | Stakeholder-building and community engagement
Dr Jim Innes	Durham University Geography | Palaeo-environments and palynology
Dr Stephen J Sherlock	Freelance Archaeologist | Regional multi-period archaeology and field practices
Dr Rob Young	Freelance Archaeological Consultant | North-east archaeology and Mesolithic period

Specialist Advisors

Dr Alison Sheridan	National Museums of Scotland, Principal Curator, Early Prehistory section of the Scottish History and Archaeology Department, specialises in the Neolithic and Bronze Age of Britain and Ireland
Dr Fraser Hunter	National Museums of Scotland, Principal Curator, Iron Age and Roman collections

Landowners

John Ryder	Thank you for giving access through your land so that we could conduct survey and excavation work

Volunteers

1. John Marshall
2. Karen Marshall
3. Matthew Bamborough
4. Emma Watson
5. Christopher Watson
6. Ian Wyre
7. Sam Wyre
8. Richard Stonehouse
9. Kira-May Charley
10. Richard Trelfa
11. Lindsay Teasdale
12. Guy Forester
13. Rose Forester
14. Cezary Namirsk
15. Luke Collin
16. Courtney McAuliffe
17. Gordon Ford
18. David Dance
19. Michael Sherry
20. Roisin Thompson
21. Claire Hodson
22. Deborah Walker
23. Rob Cox
24. Sara Gibson
25. Christopher Curr
26. Lucas Curr
27. Leslie Quade
28. Craig Anderson
29. Rachel Dunn
30. Geno Naughton
31. Kirsten Robinson
32. Shari Bone
33. Christoph Doppelhofer
34. Geoffrey Bell
35. Alan Bradley
36. Joyce Errickson
37. Unity Stack
38. Linda Taylor
39. Dawn Docherty
40. Paul Docherty
41. James Martin

Team Mascot

Echo

Site Supervisor, Bone Searcher and Osteo-archaeological Assistant to Lindsay Teasdale.

1 Introduction: The Eston Hills, Teesside

As an outlier of the North York Moors, the Eston Hills are situated on the south side of the Tees estuary (Spratt 1993; Carter 2017). The hills fringe the suburbs of the conurbation of Middlesbrough, forming the nearest accessible countryside for the urban population. The area is composed of moorland, wetlands and woodlands, and has attracted human settlers since at least the end of the last great Ice Age, around 10,500 BC. Before the ice melted, the level of the North Sea was 50m below its current level, leaving a land bridge between Britain and Europe now referred to as *Doggerland* (Figs. 1 and 2). As the temperature warmed, the sea level began to rise, rapidly and often perceptibly between generations. Around 6100 BC, and after a cold climatic interjection around 6200 BC (the '8.2ka episode'), a series of massive underwater landslides off the Norwegian coast, the *Storegga* slides, triggered a tsunami that completely flooded what was remaining of the land-and-island bridges, confirming Britain as an isolated peninsula. Hence, areas of higher ground, such as the Eston Hills and North York Moors, became the main focus for human settlement.

Figure 1 Britain, as we know it today, was never an island for many millennia. Sea level rise, climate change and catastrophic episodes eventually separated us from Continental Europe, physically, but not in terms of human connections, seafaring and memory.

Flint tools dating back to at least around 8500 BC have been found and recorded from the Eston Hills and from other nearby sites such as Greatham Creek in the Tees Valley (possibly equating to even earlier dates like those at Star Carr in the Vale of Pickering), Highcliff Nab near Guisborough, Danby Beacon, as well as in the mid-to-upper reaches of the Tees and Swale rivers. Flint tools are regularly found in disturbed areas of ground in the Eston Hills, hinting at the area's archaeological importance. Two key collections of flint tools from the Mesolithic period (10,000-4000 BC) found during the late 1970s and the mid-1980s can be seen in the H. Duffy Collection at Kirkleatham Museum, Redcar, and as a result of fieldwork by Don Spratt also in the 1980s, mostly deposited in the Dorman Museum, Middlesbrough. However, the majority of these finds are unstratified, many not spatially secured, and so they do not give accurate clues to dating specific locations and contexts, and are therefore somewhat removed from what people were doing in these places, through time, in our research area. This is, in part, a major reason for returning to this landscape with systematic approaches and scientific techniques.

Figure 2 North-east Yorkshire as it might have appeared during the last Ice Age, over 12,000 years ago. Glaciers originating from Scandinavia dragged flint and other erratic rock types from Denmark, while glaciers from Scotland, the Pennines and Cumbria carried cherts and other metamorphic rocks. Both flint and chert were exploited throughout prehistory.

Image: Wikicommons

The Mesolithic (Middle Stone Age) inhabitants of today's British Isles were hunter-gatherer-fishers, exploiting all the natural resources they could find, creating tools from flint and chert, moving around a mind-mapped landscape that connected to Denmark, Belgium and the low countries. The Mesolithic period lasted for around 6000 years, until a brief transitional period between 4000 and 3800 BC that saw huge changes in the way people lived and related to their landscapes, communed together, and perceived their own heritage, perhaps newcomers and concepts of integration. These changes, marking the beginning of the Neolithic (New Stone Age 4000-2500 BC), included the introduction of agriculture and domestication of animals, the manufacture of pottery, the development of monumental building in the form of wooden and stone circles, henges and collective burial places, which were also centres of feasting and worship, and of increasingly location-tied persistence: in other words, people increasingly bonded with a place.

The occupation of and engagement with locations like the Eston Hills throughout the Neolithic period can be seen through the presence of earthworks acting as linear boundaries (Vyner 1995, 16−30) which were almost certainly part of ritual and memorial practices, continuing into the Bronze Age (2500-600 BC). The Eston Hills are home to numerous burial mounds dating from the Bronze Age (Crawford 1980; Smith 1994) as well as dozens of impressive examples of Late Neolithic and Bronze Age rock art (Brown & Chapel 2005). These monuments demonstrate that the area retained its importance as a respected landscape even when, again with climate change, social transformations, depletion of agriculturally-viable soils, saw the gradual migration to the lowland plains. These changes, we are discovering through fieldwork in previously 'blank' areas, are evident directly around our research areas, and often wetland-related, like Upsall Grange, Nunthorpe (Fig. 3), Lazenby, Kirkleatham, the Vale of Guisborough, Skelton as well as north of the Tees (Haselgrove & Healey 1992) – all the locations where evidence for past human activity was previously considered absent but is increasingly apparent when one looks.

Figure 3 Late Mesolithic to Early Neolithic flint blades from Upsall Grange, Nunthorpe, discovered during systematic field-walking. There is increasing evidence for early activities across the Cleveland plain, and river courses such as the Tame and Leven, and wetlands such as at Morton Carrs.

Image: © S. Carter

A Late Bronze Age hillfort is situated at Eston Nab on the cliff edge overlooking the Tees Estuary. The hillfort was originally protected by a palisaded enclosure approximately 75m in diameter (Fig. 4). In the Late Bronze Age (1200-600 BC) the palisade was replaced by a huge boulder wall; this was later reinforced by a bank-and-ditch earthwork. The hillfort sits on the highest point of the Eston Hills, 242m above sea level, and it is the only surviving hillfort in our region. Many centuries later during the Napoleonic Wars, a beacon was built on the site.

Figure 4 The hillfort at Eston Nab as it might have appeared in the Late Bronze Age. We now know that there is evidence for more settlement outside the ramparts.

From the mid-19th century, the cliff edge at Eston Nab was quarried for sandstone and ironstone, causing damage to the hillfort and exposing it to further erosion. Much of the stone in the boulder wall was robbed away: the site survives mainly as a severely eroded earthwork. The hillfort attracted the attention of antiquarians as early as 1808, and was excavated in 1927 by Frank Elgee, former curator at Dorman Museum, Middlesbrough (Elgee 1930). In 1988 it was partly re-excavated as part of a wider investigation into prehistoric land use and – as we still see today – monuments and heritage at risk of erosion and damage (Vyner 1988; 1991). Blaise Vyner, former head of the Cleveland County Council Archaeology Section, concluded that the hillfort was not continuously occupied, despite the overall duration of its use: he suggested that it mainly served a lowland community either needing to defend itself periodically or, in combination, as a statement of power and control.

It is because of its defensive, highly visible (out- and in-bound) nature, and perceived ritual/ceremonial importance, that the whole of the Eston Hills area is criss-crossed with ancient trackways, many of which are still in evidence today. From the late 19th to the end of the 20th centuries, Eston Nab became a popular picnic spot and refreshments were served to picnickers and walkers on days out. Tragically, the very accessibility of the area means that the Hills are now plagued by acts of vandalism and arson, even though re-wilding land-management is adding charisma and richness to a previously over-exploited and neglected landscape.

Illegal off-road vehicles are scarring the moorland and causing serious damage to the Carr Pond wetlands where waterlogged deposits preserve pollen that can tell us about past environments, climate and human activity since the last Ice Age (Figs. 6 and 7). Stolen cars are often dumped and burned on the Eston Hills. Fires scorch the thin peat which, until now, has protected the archaeology. In addition, evidence left behind by Teesside's first residents is literally being washed away (Fig. 8). This fragile, unique, irreplaceable heritage is therefore at risk. Not only is the public's comfort in exploring their landscape compromised, but their safety is at risk from these criminal acts (Fig. 5).

Figure 5 The frequency of arson attacks increased dramatically during 2016-17.

It is for these reasons that this project was developed in 2017 as a matter of urgency, to investigate and record the fragile archaeology, and to find ways of involving the community in the long-term conservation and management of the Eston Hills area. The extended community team, with Anna Turley MP, are exploring the viability of extended the North York Moors National Park to this upland landscape in order to realise increased investment and protection.

Figure 6 The Carr Ponds wetland in better times, before the onset of off-road vehicle damage. The wetland is also an important wildlife haven and may date back to the end of the last Ice Age. Pollen cores from the edge already show organic survival to the Bronze Age.

Image: © S. Carter

Figure 7 The same wetland in autumn 2016 after damage by off-road vehicles.

Image: © S. Carter

Figure 8 A view from Oxen Hill on the northern escarpment of the hills towards Eston Nab in autumn 2016, showing extensive erosion by off-road vehicles and quad-bikes.

Image: © S. Carter

Further dramatic footage can be viewed on the **project website** ↳[1]

2 Project Aims and Objectives

2.1 Archaeological aims and objectives

The *ICE AND FIRE* Eston Hills Rescue Archaeology Project was designed to target key archaeological features of Eston Hills which had not previously been investigated. The Middlesbrough/Teesside area is under-researched archaeologically (see Fig.9). The fragility of the archaeological remains on Eston Hills continues to be a major concern, and so the project aims to record as much as possible before it is lost. Wildfires and the discovery of archaeological remains are not new to our area, for example in 2003 at Flyingdales Moor (Vyner 2007) as well as throughout the 20th century across the North York Moors watersheds (Hayes 1988). However, the frequency of humanly-triggered events in our area is causing significant and avoidable harm.

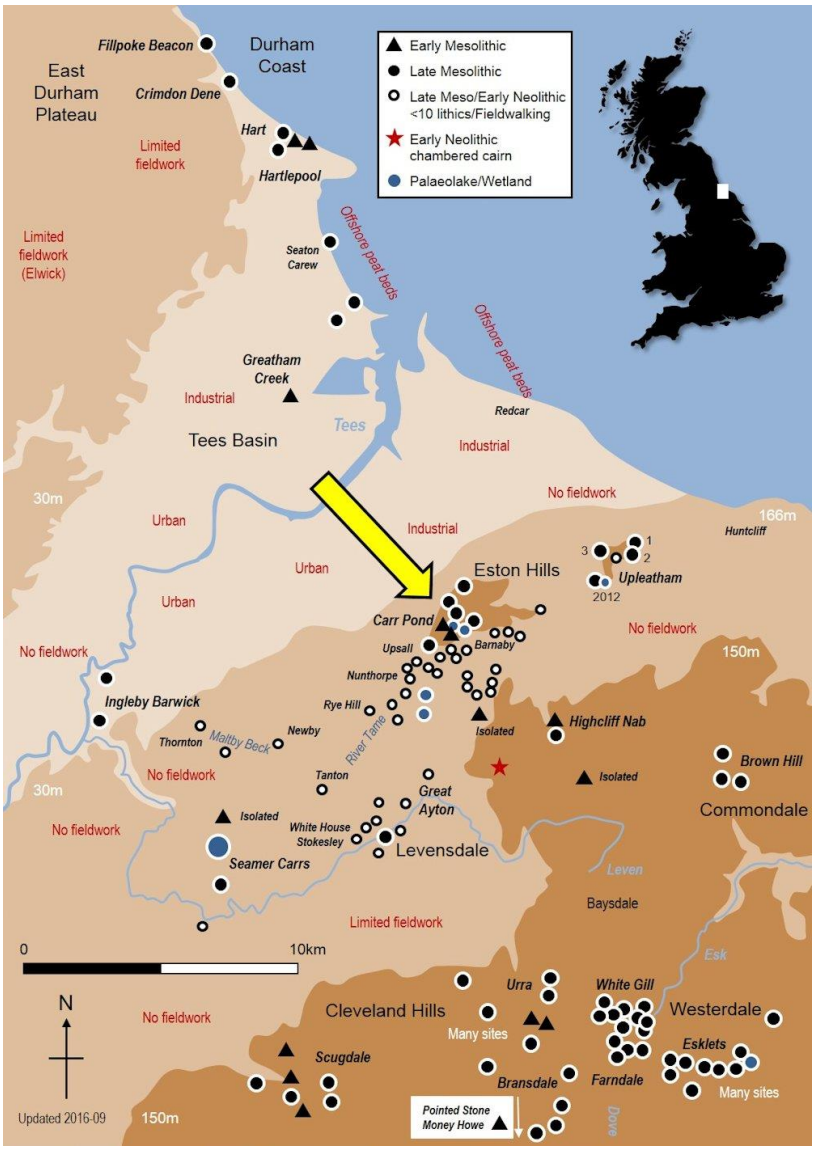


Figure 9 Early prehistoric sites in the Teesside area.

© S. Carter

2.2 Community aims and project dissemination

One of the main aims of the 2017 project was to enable community involvement in the archaeology of Eston Hills by giving on-site training in archaeological practices and methods. The training allowed a team of 41 on-site volunteers to gain an understanding of the archaeological structures and stratigraphy that can be found through test-pitting. An average of 25 people of all ages and backgrounds took part in the excavations each day for the duration of the fieldwork.

In order to keep the community informed of the project aims and progress, a website (Fig. 10) was set up at **estonhillsproject.wordpress.com** ↳[2]. The website includes a Dig Diary, photographs and videos of the project, plus a detailed account of the prehistoric archaeology. It also includes a link to the *Archaeology Skills Passport*, a scheme by which volunteer, student and early career archaeologists can build a recognised portfolio of their archaeological training and experience (see **www.archaeologyskills.co.uk** ↳[3]). For greater local dissemination of the project, regional media coverage was also sought by contacting local newspapers and radio.

Figure 10 The *ICE AND FIRE* project website and news blog was established using a free Internet-hosted service, in this case WordPress. Similarly, other services such as Dropbox for document and image storage make management and dissemination of information easier than ever before.

The project also involved a number of outreach activities with local schools, such as talks and tours. A special page, "**Cool Schools**" ↳[4], was set up on the project website with reports of pupil involvement, together with links to free downloadable resources on Prehistory and Archaeology.

The main long-term aim of the project was, and remains, to turn around perceptions and behaviour, across generations, in order to make the destruction of the Eston Hills area by a minority socially unacceptable. In order to meet this aim, a Working Group was established, hosted by Cleveland Police and Anna Turley, MP for Redcar. The Working Group includes representatives of the emergency services, local councils and the local community.

3 Project Methodology

3.1 Geophysical surveying by AOC Archaeology Group

The areas for investigation were selected from a combination of local knowledge and modern survey technology. LiDAR* images and drone footage examined by the project team highlighted several areas where archaeological features and surface finds had previously been noted, but had not been clearly defined or systematically recorded. On the basis of these images, geophysical surveying (magnetometry) was carried out by AOC Archaeology Group specialists (Fig. 11) on two principal target areas (see Appendix 2). Three smaller areas were then targeted for excavation: The *Paddock* (Areas A, B and C); Carr Pond (Area D); and Oxen Hill (Area E); see Appendix 1.

- **The Paddock** (see Appendix 3, section A3.3) was a particular area of concern for the project team because it had recently been burnt by arsonists. The bedrock geology of this area comprises sedimentary layers of sandstone formed approximately 168 to 170 million years ago in the Jurassic period. Today the bedrock sits approximately 0.2 to 0.3m below the topsoil. The vegetation of The Paddock consists of gorse, bracken and heather, which catches fire easily in dry conditions. This combination of geological, environmental and human factors means that the archaeological remains sit very close to the surface, increasing their

* LiDAR means *Light Detection and Ranging*: a surveying method that measures distance to a target by illuminating the target with pulsed laser light and measuring the reflected pulses with a sensor. Differences in laser return times and wavelengths can then be used to make digital 3-D representations of the target.

Figure 11 Alistair Galt of AOC Archaeology Group conducted systematic geophysical surveying, here detecting magnetic susceptibility that may indicate buried features and areas of earlier human activity such as hearths.

vulnerability to loss and damage. The "Paddock" was first identified as being of archaeological interest in the 1970s by H. Duffy (see Appendix 3), after a major fire revealed a large surface scatter of Mesolithic, Neolithic and Bronze Age flints, now housed at Kirkleatham Museum. The project team targeted Areas A, B and C within The Paddock: these corresponded to strong magnetic anomalies revealed by the geophysical survey suggesting the presence of built structures and/or hearths.

- **Carr Pond** was targeted by the project team because a possible man-made structure had previously been identified in aerial photographs taken by the RAF for the Ordnance Survey in 1946 (Fig. 12). This information was brought to the attention of the project team by local archaeologist John Brown, who was keen to see a new survey in this particular area. LiDAR images of Carr Pond seemed to confirm the findings of the aerial photographs (Fig. 13). The project team wanted to find out more about this feature to see whether it might warrant further investigation in future excavations. The bedrock geology of the area consists of sedimentary layers of Jurassic sandstone, siltstone and mudstone. The area has become a wetland at the eastern side because the modern pathway has blocked the natural drainage route, meaning that the area is now constantly underwater. Regrettably, deep-cut erosion by off-road vehicles is particularly acute here too.

Figure 12 RAF aerial photograph for the Ordnance Survey, from 1946.

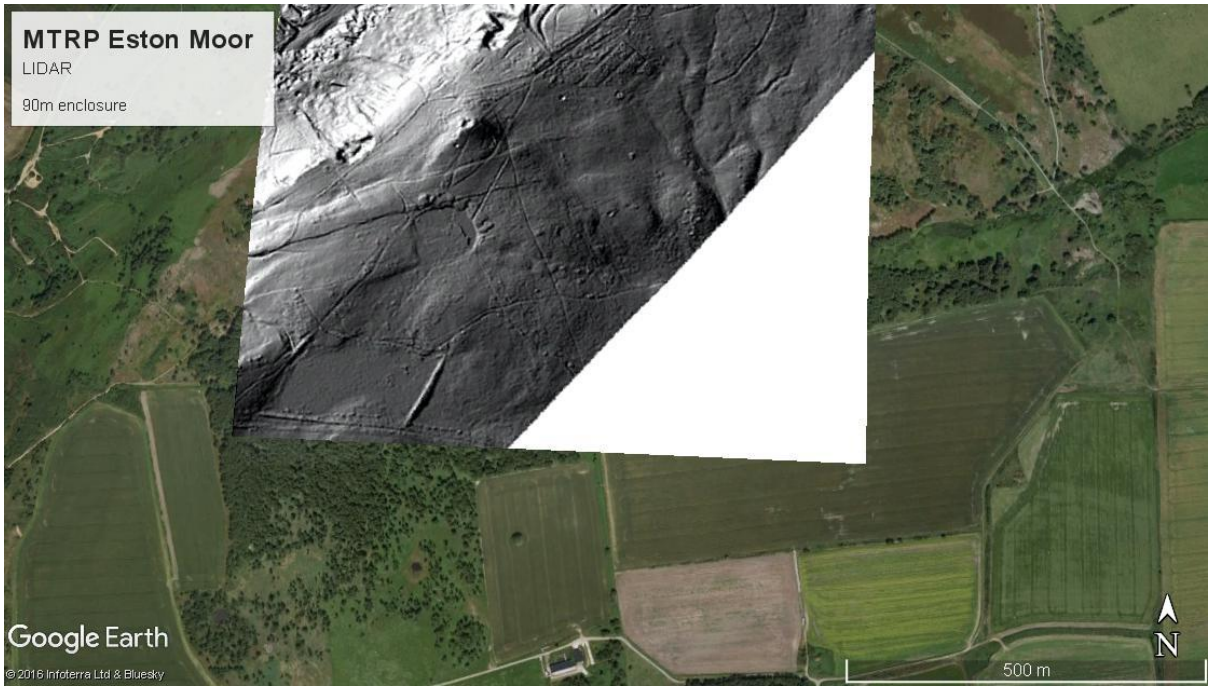


Figure 13 An overlay of LiDAR data on a recent aerial image of the western end of Eston Hills, highlighting the circular 'sheep dip' anomaly, now partly filled with drainage water.

Image courtesy of John Brown, Mid-Tees Archaeology Project

- **Oxen Hill** was targeted because large quantities of surface flint and stone tools, none native to the area's base geology, had previously been found on the trackway. However, the trackway has become severely eroded by the illegal use of off-road vehicles, making it necessary to investigate and rescue as much archaeology as possible before further damage occurs.

3.2 Geophysical surveying results | See Appendix 2

The initial target areas were surveyed with magnetometry using a *Bartington Grad601-2* dual fluxgate gradiometer. The survey proved challenging, owing to the nature of the terrain. The geology created highly magnetic background noise, and was extensive in the south eastern area in particular, probably as a result of the base geology being closer to the surface. In addition, modern disturbance occurs where a stronger dipolar response was recorded and where the modern footpaths are known to be located. It must be recognised that the fire damage on the site may also have added to these apparent areas of 'noise', in addition to both the geology and modern disturbance areas.

Overall, therefore, the survey was very "noisy", making it difficult to see any definitive archaeological features or trends (Fig. 14). Most of the interpretations have been related back to the topography visible in the LiDAR data and the aerial photography, and so at present are considered as relating to topographic features that may or may not be of an archaeological origin (Fig. 15). Until more intrusive ground-truthing of the results has taken, it is difficult to argue for a non-geological origin for the anomalies.

The more probable archaeological features are anomalies with a strong magnetic response based either on their relationships to known topographic features, such as the depression in the north thought to be archaeological in nature, or their unusual patterning which might suggest a possible archaeological source. At this stage it must be emphasised that until more intrusive work is undertaken, these anomalies must be considered as natural responses rather than definitive archaeology. Nevertheless, we are hopeful of an archaeological origin in many cases.

The discrete linear trends identified in the geophysics have more tentative positive or negative responses that are distinct from the background noise. These can mostly be seen in the aerial photography and LiDAR, which

suggests they are related to these features. The unclear trends have a weaker positive or negative response than the discrete linear trends and are more likely to be related to natural features, as no features can be seen in the base-map or the LiDAR.

We recommend that these results are used in conjunction with other complementary methods, such as resistivity surveys, to ascertain whether archaeological features are or are not present in the area. It may well be useful to undertake a wider area of survey incorporating the data which we have already collected.

Figure 14 Geophysical survey results overlay onto terrain imagery for the *Paddock* and Carr Ponds areas A, B, C and D. © AOC Archaeology Group

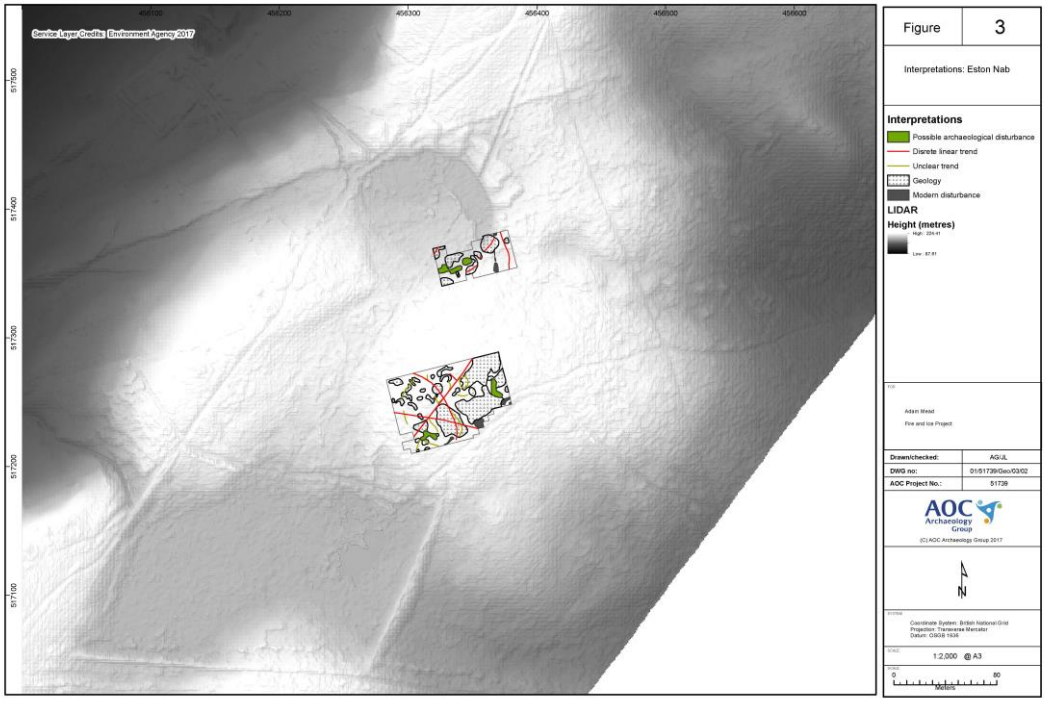


Figure 15 Geophysical survey interpretation results overlay for the *Paddock* and Carr Ponds areas A, B, C and D. © AOC Archaeology Group

Figure 16 Volunteers excavating test pits and trenches in the Paddock area.

3.3 Fieldwork results

See Appendix 1 for location plans, Appendix 4 for recording templates

Volunteers were taught surveying techniques such as field-walking and using a Total Station Theodolite (TST). Most of the fieldwork then consisted of test-pitting, excavating 1m^2 pits, sometimes then extended, in areas in which the geophysical survey had indicated anomalies which could be human.

- A total of 35 test pits were excavated across four of the designated areas (A-C and E) of the site. Two longer trenches were also excavated in the Carr Pond area (Area D) in order to investigate the earthwork which had been detected and photographed by the RAF Ordnance Survey of 1946, mentioned above.

- Volunteers were trained how to excavate, mark and record their finds using context sheets. They were also taught how to sieve through excavated soil so that any small finds and organic material of interest, which had been missed in the initial excavation process, could be collected (Fig. 17).

Figure 17 Sieving all excavated material to recover finds that might otherwise be missed, here with a sighted and a visually impaired volunteer (totally blind, with his permission to state here) working together.

Image: Clive Winward

Other techniques used for gathering data included the recording of excavated features through drawing and photography, and the collection of soil samples. In addition, a pollen core sample was taken from the wetland area by Dr Jim Innes of the Project Advisory Team (Fig. 18), and has subsequently been radiocarbon dated to the Bronze Age. The sample was taken in order to establish the date of the base deposits by examining the radiocarbon aging of the organic material. These samples require further detailed pollen analysis (to be undertaken by a Durham University research student) and therefore results have not been included in this interim report in any

detail. However, the C^{14} radiocarbon determination is confirmed as around 1500 BC (Lab ID Poz-96168) as a peripheral edge-deposit. We hope for even earlier results and organic survivals in the deeper, central areas of the wetland.

Finds were collected and cleaned by archaeology students Matthew Bamborough and Bethany Markham in the laboratories at Durham University. Lithic (stone) finds were sent to Spencer Carter, a lithics specialist and prehistorian, for analysis (see Appendix 3 and Fig.19, below). Once all the finds have been fully processed and analysed to academic standards, they will be submitted for archiving, together with full documentation, at Kirkleatham Museum or similar accredited repository, for future research and displays as part of the wider community heritage conservation process.

Figure 18 (Right) Dr Jim Innes, Department of Geography at Durham University and palaeo-environmental expert, with Adam Mead taking an auger pollen core from the edge of the Carr Ponds wetland.

Figure 19 (Below) Lithics specialist Spencer Carter examining some of the early 2017 finds at Flatts Lane Country Park centre.

4 Project Outcomes for the First Season

4.1 Excavation results

Area A: The *Paddock*

David Errickson trained eight of the community volunteers to survey and excavate in Area A. Five 1m² test pits were opened here, resulting in the discovery of two sandstone-filled hearths (Figs. 20 and 21) with datable flint (Fig. 22), establishing that these hearths are likely of Neolithic date. Charcoal samples were also taken.

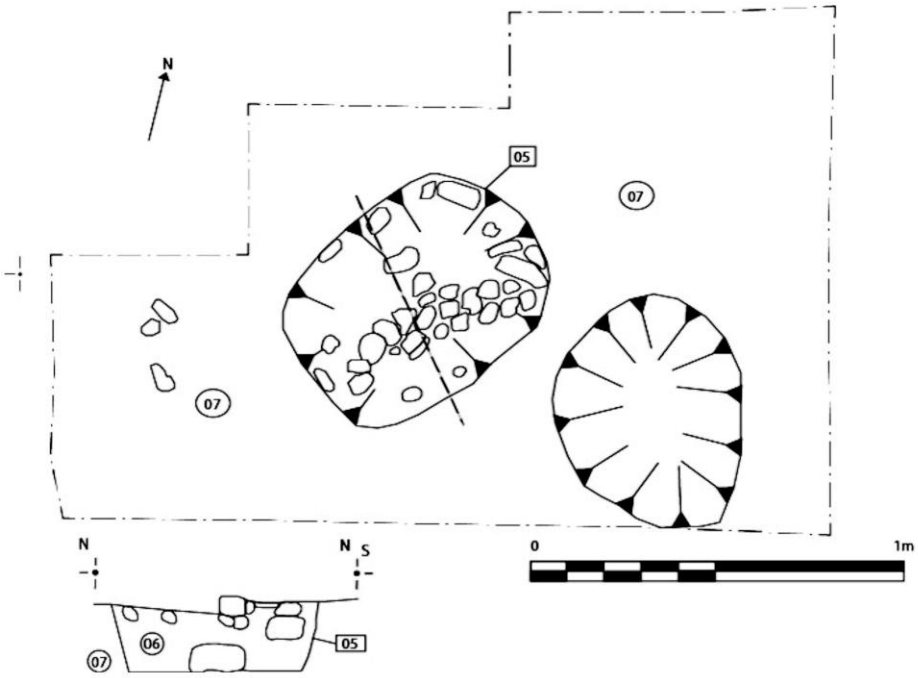


Figure 20 Plan of two hearths in Area A, Test Pit A3.

Figure 21 Hearth Feature [05] in Area A, Test Pit A3.

Figure 22 Volunteers recording and measuring the hearth in Area A.

Image: Clive Winward

Figure 23 Flint artefact from Hearth Feature [05] in Area A, Test Pit A3.

Image: Clive Winward

Area B: The *Paddock*

The community volunteers were trained by Adam Mead to work in pairs for excavation, recording and finds sampling in this part of *The Paddock* (Fig. 24). A total of 20 test pits were opened in Area B, with flint being found in the majority of pits. Test Pit 5 in this area revealed the presence of a third hearth.

Figure 24 Mother-and-son volunteer partners working in Area B.

Image: Clive Winward

Area C: The *Paddock*

Two test pits were opened in this area, but no significant finds were revealed. This is probably due to the fact that the possible geophysical anomaly which the project team had targeted was missed. Future surveys and excavations should re-target this area.

Area D: Carr Pond

Two trenches were opened on opposite sides of Carr Pond. Trench 1 targeted a central depression of this feature, which has never previously flooded: a reorientation of a modern trackway had caused the depressed area to fill in heavy rain with surface run-off from the moorland above. Trench 2 targeted a feature which was believed to be archaeological in origin; the stratigraphy of this trench proved that this was indeed the case.

Area E: Oxen Hill

Eight test pits were opened in this area alongside a trackway upon which large quantities of surface flint and stone tools have been recovered in recent years due to ground disturbance. In Test Pit 4, a posthole containing a single pottery sherd was discovered (Figs. 25 and 26), though the dating for the latter has yet to be confirmed (Fig. 34).

Figure 25 Stone-packed posthole in Area E, Test Pit E4, prior to excavation.

Figure 26 Posthole in Area E, Test Pit E4after section recording and excavation.

4.2 Finds, big and small

The project team feels that the first season of fieldwork, in addition to what we know from previous finds in the 19th and 20th centuries, has exceeded all expectations. By careful and systematic recording, observations within the landscape and the application of scientific remote-sensing techniques, we have begun to link prior knowledge with verifiable data. This helps us not only to articulate the risks, but then to form new questions to test with more fieldwork. To this extent, we also look to the neighbouring landscape with some considerable excitement. Not far away, above Skelton, we have spotted a large ditched-feature, perhaps an enclosure, perhaps (and likely) prehistoric, in an area that has seen no previous work (Fig. 27). The release of publically-accessible LiDAR data by the UK Environment Agency, easy to access by anybody on the Internet, has not just helped us with our project on the Eston Hills, but also revealed anomalies that we and future generations can explore.

Figure 27 This large, oval, enigmatic and likely prehistoric feature is visible in recently released LiDAR imaging data, located above Skelton on the opposite side of the Vale of Guisborough.

UK Environment Agency open source data and Dr David Petts, Durham University

While work is ongoing to analyse previous Eston Hills finds in museum archives (Dorman Museum and Kirkleatham Museum), private collections (some accessible, some not), and activities related to earlier phases of this project itself (Fig. 28), we can present some exciting discoveries. What follows here is an interim summary. More information about the prehistoric stone tools form Appendix 3 of this present report. Much more information will be made available in news items on the project website as progress continues. We can, however, say with some confidence already, that one of the excavated finds is causing many expert heads to be scratched and looks to be not only extremely unusual, but also very rare on a national level.

Figure 28 Surveying lithics finds in 2014 during field-walking near. Each find spot is exactly 3-D located using GPS referencing tied to the Ordnance Survey national grid, with millimetre accuracy. Image: © S Carter

Big Finds: rock-art

In an area adjacent to the 'sheep dip' wetland area of Carr Ponds, and the enigmatic potential features we wish to explore in future seasons, a volunteer's observation (a Young Archaeologist) together with some gentle removal of vegetation, appears to have revealed a new piece of rock-art. The large gritstone boulder (Fig. 29) displays both cup-marks associated with the Late Neolithic period, but also a carved cross- or compass-like emblem of unknown period. The Eston Hills, like adjacent moorland areas, are replete with such artwork, in various forms (see Brown & Chappell 2005), and it is exciting to be able to add this to the record.

Figure 29 A large gritstone boulder between the eastern Carr Pond 'sheep dip' area and Oxen Hill. It displays cup-marks of likely Late Neolithic date as well as an enigmatic cruciform emblem. It is as yet unclear whether this stone was always flat or, at some stage, an upright *monolith*. Scale: 1m, facing north-east.

Small Finds: stone tools

Previous explorers of this landscape, from the 19th and 20th centuries, with differing commitment to recording, have already provided us with a legacy record of potential, in terms of what we might expect to find, but have also prompted research questions about what might have been previously over-looked (Blinkhorn & Milner 2012; Manby 2003; Manby et al. 2003; Roskams & Whyman 2007; Young 2002). We do know that we have certain Early Mesolithic activity, for example, dating back to around 8500 BC, if not earlier. These mobile hunter-gather-fishers, perhaps our first re-colonisers after the Ice Age, followed food and resources, tracked their game – reindeer and wild horses being the prime targets – by observation, patience and interception. This likely explains our few recorded sites in places that allowed this, such as Highcliffe Nab, Danby Beacon, Osmotherly Stones, and the Eston Hills all with commanding views in a tundra landscape where birch and hazel scrub began to encroach the glacial wilderness. With the return of vegetation in a rapidly warming climate, also saw the return of fauna and other flora that make human life sustainable. Several of our artefacts are of a certain flint-type that originates in the Vale of Pickering, perhaps offshore (today's perspectives), East Yorkshire and Lincolnshire Wolds. Clearly people were moving great distances over time – we also have Pennine chert in the Eston Hills assemblages.

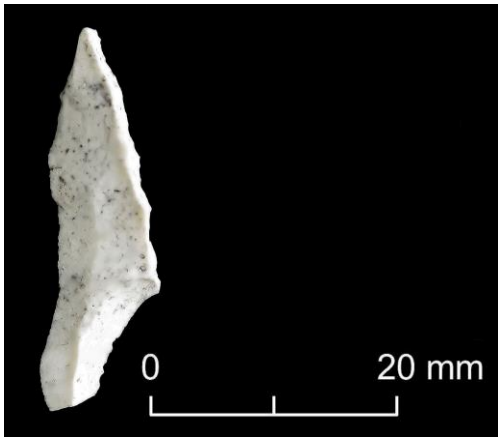
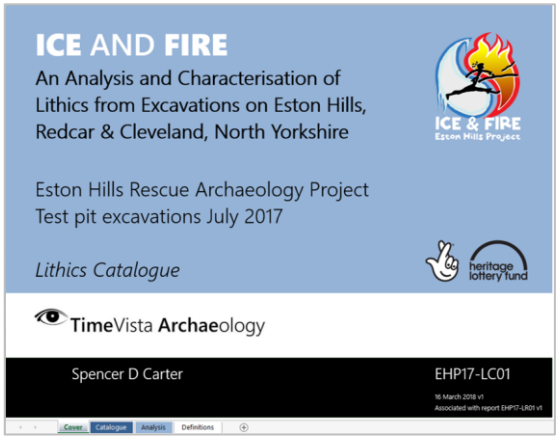


Figure 30 Early Mesolithic flint projectile of Deepcar type dating to around 8500 BC. It was found, with other flints, on a sandy knoll cut by a footpath on the south-west side of Carr Ponds. Image: © S. Carter

The Eston Hills artefacts are of a type known as "Deepcar" form (a type site in South Yorkshire, near Sheffield, excavated in 1962). The more well-known find-spots in the Vale of Pickering and at Star Carr (Scarborough) are of slightly different form, and perhaps five hundred or so years earlier (Conneller et al. 2016), but in a landscape still visited, from time to time, by hunter-gathers, in the slightly less chilly periods of the late glacial period. Scotland has such evidence in profusion, and we might expect the same here – and we can reasonably confidently say we can see it in Wensleydale and Teesdale (Laurie 2003).

Interestingly, we do have "Star Carr" type signatures from places like Greatham Creek, directly north of the Tees estuary, and Street House Loftus to the south. We most certainly have similar "spot-finds" along our major rivers, such as the Tees, Swale and Ure in the Vales of Mowbray and York, although little so far between the Tees and Tyne until the Scottish borders farther north. This may be related to a real absence of evidence but equally a lack of fieldwork and landscape changes since this distant period – likely a combination of factors.



Analysis of the 2017 season lithic finds, the vast majority of flint, both unburnt and burnt, is in the form of a *Post-Excavation Assessment* (PXA) which, while suitable for an overall characterisation, will be followed up with a more detailed report for researchers and museum archiving. The present catalogue is included here in Appendix 3 and is also available online in **PDF** ↳[5] and **Excel Spreadsheet** ↳[6] formats together with descriptive definitions. What follows below is a summary of observations and illustrations of selective finds which portray human activities through various prehistoric periods, with variations in the sampled test pit areas. Table 1 below summarises the overall composition and character of the finds.

However, it is important to note that we cannot talk about "assemblages" since we are dealing with sampled areas, events in the past which influenced the deposition of lithics in different places and different times (presence and absence), including the potential mixing of earlier artefacts in later archaeological contexts. This includes debitage (debris) from knapping and tool manufacture (and in one case, reworking an older flint artefact), but also formal tools and utilised pieces which are likely not in their original place of manufacture. The time-old archaeological saying that "absence of evidence is not necessarily evidence of absence" applies very well here, and not all activities will have involved stone-based tools. The highly acidic moorland soils mean that, generally, bone, shell and organic materials do not survive. Nevertheless, this is a "persistent place" where our ancestors visited and ultimately settled, no doubt enjoyed, for multiple generations to the present day (Barton et al. 1995; Conneller 2005).

What we do have is a flavour of where concentrations exist for future investigation, associations with features such as hearths or postholes and, conversely, areas without a density of artefacts. Using technological indicators – changes in methods and artefact forms through time (trends) – we can sometimes also offer suggestions for chronologies, as well as being able to distinguish humanly-knapped flint from natural pieces. On this point, Table 1 shows that 17% of the finds submitted for analysis are considered natural. Together with the sieving of all excavated deposits, this reflects a very good approach to finds recovery and an effective "if in doubt, bag it" policy.

As already noted, the test pit Areas A and B in *The Paddock* have relatively high concentrations of chipped stone finds, as does Area E at Oxen Hill. In all cases, the majority of finds are of debitage, including some cores and core fragments – the discarded end result of knapping (or "reducing") a flint pebble to remove usable flakes and blades. This is also reflected in the reduction sequences, that is, the proportion of outer cortex surviving on the finds, where all stages are present. The presence of burnt lithics is a reasonable indication that hearths were present, and indeed found by geophysical surveying (magnetic susceptibility) and subsequent excavation. Burning may also be associated with funerary practices and non-domestic activities. Surface finds are also prone to burning and related damage in the wild-fires and arson-fires that have occurred in the past and more recently.

Lastly, we can also say with confidence that all prehistoric periods are represented in both artefacts as well as debitage, except the Early Mesolithic in the 2017 sampled areas. Nonetheless, we do have that well represented in legacy collections. Of particular interest is a strong signal of Late Mesolithic to Early Neolithic, and perhaps even transitional, activity in Area B of *The Paddock* locale. This backs up prior observations related to finds brought to the surface by off-road vehicle damage and erosion.

Table 1 Lithic finds quantification, composition and chronology.

SUBMITTED FINDS	*Area A*	*Area B*	*Area C*	*Area D*	*Area E*	*X-Surface*	Total %	Total	All submitted items
Lithics - Chipped Stone	38	36	13	4	63	5	80%	159	Knapped only
Lithics - Ground / Polished	1	1	–	–	–	–	1%	2	Artefacts only
Non-Lithic Materials	3	1	–	–	1	–	3%	5	Excluded from below
Natural	–	6	2	8	17	–	17%	33	Excluded from below
Total	**42**	**44**	**15**	**12**	**81**	**5**	**100%**	**199**	

FINDS DENSITY	*Area A*	*Area B*	*Area C*	*Area D*	*Area E*	*X-Surface*	Average
Excavated m²	*10*	*22*	*5*	*3*	*8*	–	*48 m²*
Informal Name		*The Paddock*		*Carr Pond*	*Oxen Hill*	*Pig Bank*	
Lithics - Chipped Stone	3.8	1.6	2.6	1.3	7.9	–	3.45
Lithics - Ground / Polished	0.1	0.05	–	–	–	–	0.03
Total	**3.9**	**1.7**	**2.6**	**1.3**	**7.9**	–	**3.48**

RAW MATERIALS	*Area A*	*Area B*	*Area C*	*Area D*	*Area E*	*X-Surface*	Total %	Total	Excludes indeterminate (burnt)
Flint - Translucent	5	6	–	1	4	1	18%	17	
Flint - Semi-Translucent Speckled	11	8	6	–	27	4	61%	56	
Flint - Opaque White-Grey-Cream	3	4	–	–	3	–	11%	10	
Chalcedony-Agate	–	–	1	–	–	–	1%	1	
Chert	1	4	1	–	–	–	7%	6	
Other	1	1	–	–	–	–	2%	2	
Total	**21**	**23**	**8**	**1**	**34**	**5**	**100%**	**92**	

COMPOSITION	*Area A*	*Area B*	*Area C*	*Area D*	*Area E*	*X-Surface*	Total %	Total	
Formal Tools	4	4	–	–	1	4	9%	13	Chipped stone
Non-formal Tools / Utilised	–	3	–	–	4	1	5%	8	Chipped stone
Ground / Polished Artefacts	1	1	–	–	–	–	1%	2	Lithics
Debitage	38	34	10	1	40	–	84%	123	Knapped only
Total	**43**	**42**	**10**	**1**	**45**	**5**	**100%**	**146**	

COMPOSITION - DEBITAGE	*Area A*	*Area B*	*Area C*	*Area D*	*Area E*	*X-Surface*	Total %	Total	Chipped stone only
Cores / fragments / rejuvenation	1	1	–	–	1	–	3%	3	
Blades / fragments	1	3	1	–	4	–	8%	9	
Bladelets / fragments	–	4	1	–	4	–	8%	9	
Flakes / fragments	8	5	6	–	13	–	30%	32	
Angular debitage / indeterminate	4	6	2	1	9	–	21%	22	
Chips <10mm	16	3	1	1	11	–	30%	32	
Total	**30**	**22**	**11**	**2**	**42**	**0**	**100%**	**107**	

TECHNOLOGY	*Area A*	*Area B*	*Area C*	*Area D*	*Area E*	*X-Surface*	Total %	Total	All chipped stone
Blades / fragments	2	6	1	–	5	1	12%	15	
Bladelets / fragments	–	5	1	–	4	–	8%	10	
Flakes / fragments	12	8	6	–	17	4	38%	47	
Angular / indeterminate	20	11	2	1	19	–	42%	53	
Total	**34**	**30**	**10**	**1**	**45**	**5**	**100%**	**125**	

REDUCTION SEQUENCE	*Area A*	*Area B*	*Area C*	*Area D*	*Area E*	*X-Surface*	Total %	Total	All chipped stone
Primary	3	1	1	–	1	–	5%	6	Full dorsal cortex
Secondary	6	13	–	–	8	–	22%	27	Partial dorsal cortex
Tertiary	18	14	10	1	31	5	63%	79	No dorsal cortex
Indeterminate	8	1	–	–	4	–	10%	13	Burnt or fragmentary
Total	**35**	**29**	**11**	**1**	**44**	**5**	**100%**	**125**	

BURNING	*Area A*	*Area B*	*Area C*	*Area D*	*Area E*	*X-Surface*	Total %	Total	Chipped stone only
Debitage - Burnt	17	9	3	–	15	–	35%	44	
Debitage - Unburnt	13	15	7	1	25	–	49%	61	
Tools - Burnt	–	1	–	–	1	–	2%	2	
Tools - Unburnt	4	6	–	–	4	4	14%	18	
Total	**34**	**31**	**10**	**1**	**45**	**4**	**100%**	**125**	

CHRONOLOGY	*Area A*	*Area B*	*Area C*	*Area D*	*Area E*	*X-Surface*	Total %	Total
Prehistoric - Non-diagnostic	31	17	11	1	42	–	82%	102
Early Mesolithic	–	–	–	–	–	–	0%	0
Late Mesolithic	–	7	–	–	–	–	6%	7
Late Mesolithic - Early Neolithic	–	2	–	–	2	1	4%	5
Early Neolithic	1	1	–	–	–	1	2%	3
Neolithic	1	–	–	–	2	–	2%	3
Late Neolithic - Early Bronze Age	1	–	–	–	–	2	2%	3
Neolithic - Bronze Age	–	2	–	–	–	–	2%	2
Bronze Age	2	–	–	–	–	–	2%	2
Total	**34**	**29**	**11**	**1**	**46**	**4**	**100%**	**125**

Selective catalogue: Area A

Figure 31

F012 Side-and-end scraper on a crested flint blade, Neolithic.

F022 Flint flake core with multiple platforms, Early Neolithic.

F026 Awl or multi-purpose combination tool on a large, irregular corticated flint flake, Late Bronze Age.

F032 Side-scraper (or possibly irregular projectile) on a flint flake with retouch on right edge, Neolithic to Bronze Age.

Selective catalogue: Area B

Figure 32

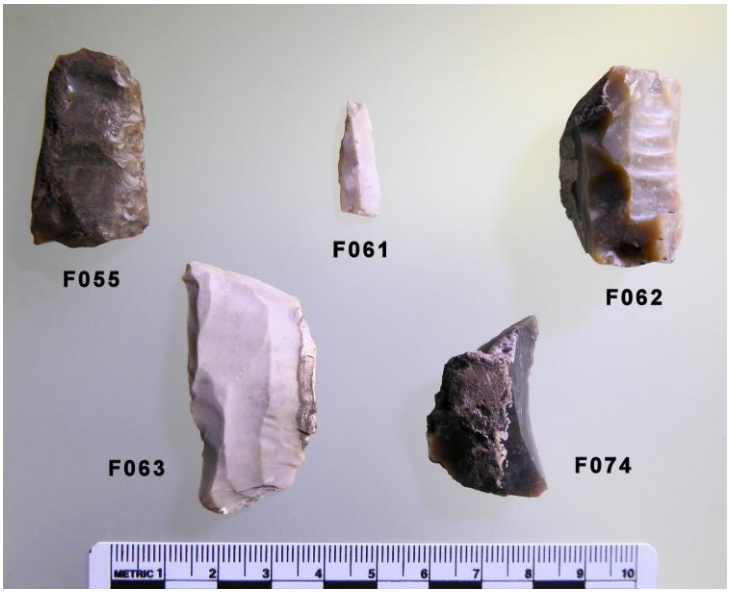
F055 Broad burnt flint blade fragment (mesial) with semi-invasive retouch on right side, Late Neolithic to Early Bronze Age.

F061 Narrow-blade flint microlith, straight-backed bladelet, Late Mesolithic.

F062 Small flint blade core with two platforms (bi-polar) and evidence of platform preparation (grinding) to aid blade removal, Late Mesolithic to Early Neolithic.

F063 Multi-purpose tool on a white flint flake but with blade-like dorsal scars, use-wear damage and awl-piercer type point on distal end, Early Neolithic, possibly earlier.

F074 Flint core fragment possibly expediently utilised as an awl, Prehistoric, likely Neolithic.



Selective catalogue: Area E

Figure 33

F101 End-scraper on a large, burnt flint flake, Neolithic.

F155 Utilised flint blade (overshot due to heavy knapping) with marginal retouch or use-wear damage on left edge, Late Mesolithic to Early Neolithic.

Selective catalogue: Area E Test Pit E4 posthole

Figure 34

P001 Pottery sherd with oxidised, iron-rich outer surface and reduced inner surface and core. Further specialist analysis is underway, Prehistoric to Roman-British.

Selective catalogue: Surface finds from Pig Bank

Figure 35

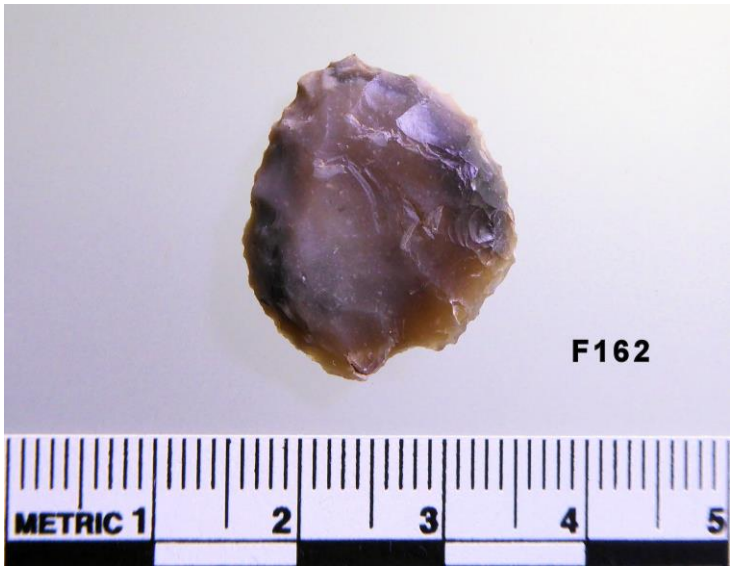
F162 Flint ovate 'thumbnail' scraper, Late Neolithic to Early Bronze Age 'Beaker' period.

Figure 36

F163 Leaf-shaped arrowhead on a blade-like flint flake with minimal edge retouch, Early Neolithic, possibly earlier.

F164 Leaf-shaped arrowhead on a blade-like flint flake with minimal edge retouch, Early Neolithic, possibly earlier.

F166 Invasively-retouched flint knife or side-scraper. Distal-end blade fragment with possibly two phases of semi-invasive edge-retouch on a cloudy-white patinated blade. The blade blank would not be out of place in a Mesolithic or Early Neolithic assemblage. The semi-acute-angled left-edge retouch breaks the blanks' patination but is less distinct than the right-edge and fresher-looking parallel retouch at a more acute angle. An interpretation might conclude that this is a legacy artefact that has seen two further, and time-distant, re-modifications. The present W is 18.2mm (minimum), surviving at L 28.6mm, T 5.2mm, with two dorsal blade scar removals on a substantial blade, Late Neolithic to Early Bronze Age.



Very special finds

Figure 37 | Area A Test Pit A4

S025 Rim or edge fragment of cannel coal or oil-shale (not jet) with polished/burnished outer convex surface and vertical slightly irregular linear tool marks on inner concave surface. Form suggests a vessel rather than a bracelet or arm-band fragment but equivocal. Diameter 90.0mm, thickness on finished edge 5.3mm, lower break 6.3mm. Tool marks are consistent with a fine flint blade or flake. A circular 'void' on both the inner and outer surfaces may be an intentional piercing for suspension or repair. The inner circle has, at 20xmag evidence for being drilled or countersunk. The 'fill' is indeterminate mid-brown pending analysis. Cleaned with soft hair-brush and distilled water.

Specialist analysis is planned at the National Museum of Scotland (Dr Alison Sheridan and Dr Fraser Hunter).

Figure 38 | Area B Test Pit B19

S161 Hammerstone or rubbing stone / pounder with a thick, tapering butt. This unusual object is ostensibly axe-shaped (as such it would match Yorkshire Type 4 in Manby (1979, 66) if of ground stone or flint). The narrow butt end is damaged by percussion with additional suggestions of pecking at the opposing splayed end. The top and bottom surfaces show indications of chamfering on the edges leaving flattened planes as might be expected as a function of rubbing along the long axes. While bevelled pebbles do occur on some Mesolithic sites, especially coastal (cf Young 2000), it seems more likely that this artefact is of Neolithic to Bronze Age date.

Further macroscopic and microscopic analysis is anticipated. Manby does note the occasional exploitation of more unusual raw materials, in addition to the usual flint, metamorphic and igneous materials (e.g. tuff), such as sandstone, siltstone and limestone.

S161

Maximum dimensions:
L 95mm, W 55mm, T 23mm

5 Community Engagement

A variety of outreach activities have taken place during the duration of the project which furthered its visibility both within and beyond the local community. Highlights include:

5.1 Cool schools

In May 2017 Adam Mead and Rita Richardson from the *Friends of Eston Hills* campaign group gave a talk at **Whale Hill Primary School**, together with Paul Payne, the Rural Crime Reduction Officer for Cleveland Police. In the first of a number of such events, the team highlighted the rich heritage, archaeology and wildlife of the Eston Hills as a community asset – "Our Place". The children also learnt about the consequences of the fires and vandalism on public safety, as well as for the farmers, landowners and emergency services.

Figure 39 *PEOPLE POWER* at Whale Hill Primary School, Eston.

Image: Rita Richardson, Friends of Eston Hills

Similarly, a talk and guided a tour of the Eston Hills with **St Pius X RC Primary School** also in May 2017 included industrial archaeology as well as areas where Stone Age flint tools have been recovered near the wetland areas, and where the damage from fires and off-road vehicles were then still visible.

Figure 40 *SAVE OUR HILLS* pupils from St Pius X School, Eston.

5.2 Videos

We were delighted to work with **Archaeosoup Productions** in making two videos, including the 15-minute "*A very special place*" which includes dramatic drone footage filmed by team member Clive Winward. In 2018 we hope to re-engage in a video about the first season's finds, legacy material in local museums, .and hands-on workshop seminars for undergraduates at Durham University and around the community.

Figure 41 Project videos can be viewed on the **website** ↪[7].

5.3 Guided walks

Adam Mead also conducted three day-long tours of the Eston Hills site with members of the public. The last of these took place on Sunday 20 October and formed a part of the "Discover Middlesbrough" 2017 Festival.

Figure 42 One of many guided walks looking at the archaeology of Eston Hills, here with the newly discovered rock art.

Image: Peter Rowley-Conwy, Durham University

Robert Nichols, director of the Festival, commented:

> *"The ICE AND FIRE walk this morning was a fascinating guided walk around Eston Hills on Teesside. We were privileged to be in the company of a group of experts assembled by archaeologist Adam Mead to unpick and unlock the history and prehistory.*
>
> *From Neolithic rock art to WW2 bomb craters there is an incredible amount to see when you have expert guides. We had all kinds of weather which really begged the question just why would people live on the hills? That and questions of how the first farmers of the Neolithic survived economically, where they lived and how succeeding Bronze and Iron Age communities looked to defend themselves were all addressed.*
>
> *Adam Mead was at pains to point out that they have as yet only scratched the surface of the archaeology from Eston Hills but we need to protect the landscape now or those stories will be lost forever. That means all helping to stop the destruction from illegal off-road vehicles and fires.*
>
> *The ICE AND FIRE project is making a positive difference looking after the past and giving a future to this precious resource, our Eston Hills."*

5.4 Media

For broader dissemination of the project amongst the local community, Adam Mead and David Errickson, chair of Teesside Archaeological Society, were invited to speak on BBC Radio Tees Breakfast show a number of times. Subject to funding, the intention is also to print and distribute this report in schools, museums, libraries, the Flatts Lane Woodland Park visitor centre and amongst community groups.

Figure 43 Adam Mead and David Errickson being interviewed live by BBC Radio Tees at breakfast time.

5.5 Next generation archaeologists

In order to connect to a broader audience of young people, Adam Mead has also given talks to the DAX (Durham Archaeology Explorers) Young Archaeologists' Club (YAC), 7−11 year-olds, at the Oriental Museum, Durham. There is, in 2018, a new YAC in Danby, North York Moors, with whom we will engage in the near future.

Figure 44 Adam Mead with next generation archaeologists in Durham.

5.6 Award recognition

The *ICE AND FIRE* project was nominated by Dr David Petts, Associate Professor of Archaeology at Durham University, for a the Council of British Archaeology's Marsh Award for Community Archaeology 2017. The project was shortlisted, and in the final round of adjudications it received "*Highly Commended*" recognition for its substantial contribution to knowledge and wellbeing.

Figure 45 Certificate from the 2017 CBA and Marsh Awards.

5.7 Regional networking

The project team and its stakeholders also believe that shifting public opinion, across generations from school children, their parents and people who benefit from tourism and economic footfall, is a local and regional priority. While the project aims to rescue archaeological and environmental assets where they are at risk, the longer term solutions must involve a coordinated effort to make anti-social behaviour entirely unacceptable in a community that values its rich historic, archaeological and natural environment. With the support of our enthusiastic MP, Anna Turley, a great deal of progress has been made both on public consultations as well as positive actions by emergency services and Redcar & Cleveland Borough Council.

Figure 46 The April 2017 kick-off meeting in Eston, hosted by Anna Turley MP. A cross-community taskforce now meets regularly to monitor progress. A number of measures have been implemented, including greater Police patrols, wrecked-vehicle removals, confiscation of illegal vehicles, and securing vulnerable access points.

Adam has delivered a presentation at the "Belief in the North" community archaeology event held at Durham University in order to disseminate the project findings to a wider audience of archaeology enthusiasts and experts. Our research also influences a national review of Archaeological Research Frameworks, also being led in our region by the University. Lastly, presentations are ongoing with local historical societies and interest groups.

6 Interim Conclusions

The *ICE AND FIRE* Eston Hills Rescue Archaeology Project demonstrates the value of inclusivity, diversity and the importance of community relevance in archaeology, as well as a research-based approach to designing a long-term sustainable venture. As well as the dig itself, the community and schools outreach activities were particularly valuable in communicating an understanding of the importance of fragile local heritage – both archaeological and ecological. Follow-up activities such as guided walks, regional media coverage and conference presentations allowed the area to become better-known in both local, regional and national archaeological communities.

While antisocial activities on the Eston Hills have been much reduced, there remain challenges for all parties with an interest in conserving and enjoying the area. There is ongoing consideration for the Eston Hills to be integrated into the North York Moors National Park for greater oversight, investment and protection. This is certainly the best way forward to protect the fragile archaeology and natural ecosystems of the area. From an archaeological perspective, this is a unique landscape which holds great potential for future work, as evidenced by this year's exciting discoveries.

References, Further Reading, Teaching Resources and Regional Museums

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Recommended further reading and resources for teachers

For the geology, archaeology and past environments of North Yorkshire and North-east England there are many additional recommendations on the **project website** ↳[10]. Most are free to download and suitable for all age groups and interests.

Schools Prehistory is a group of archaeologists and educators with knowledge and expertise in Stone Age, Bronze Age and Iron Age Britain. Their aim is to support teachers, museums and heritage organisations to develop excellence in this new area of the primary history curriculum ↳[10]. There are also **Young Archaeologists' Clubs** (YAC) for 7–11 year olds based in Durham City and Danby, North York Moors.

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Regional Archaeological Research and Resource Frameworks for England (multi-period). Association of Local Government Archaeological Officers (ALGAO) portal to **UK regional publications** ↳[11] which offer good and extensive overviews of known assets, historical context and research priorities. Each includes a useful bibliography.

Spratt, D.A. (ed.) 1993. *Prehistoric and Roman Archaeology of North-East Yorkshire*. York: Council for British Archaeology Research Report No. 87.

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Recommended museums

Regional museums with prehistoric lithics and artefacts on display

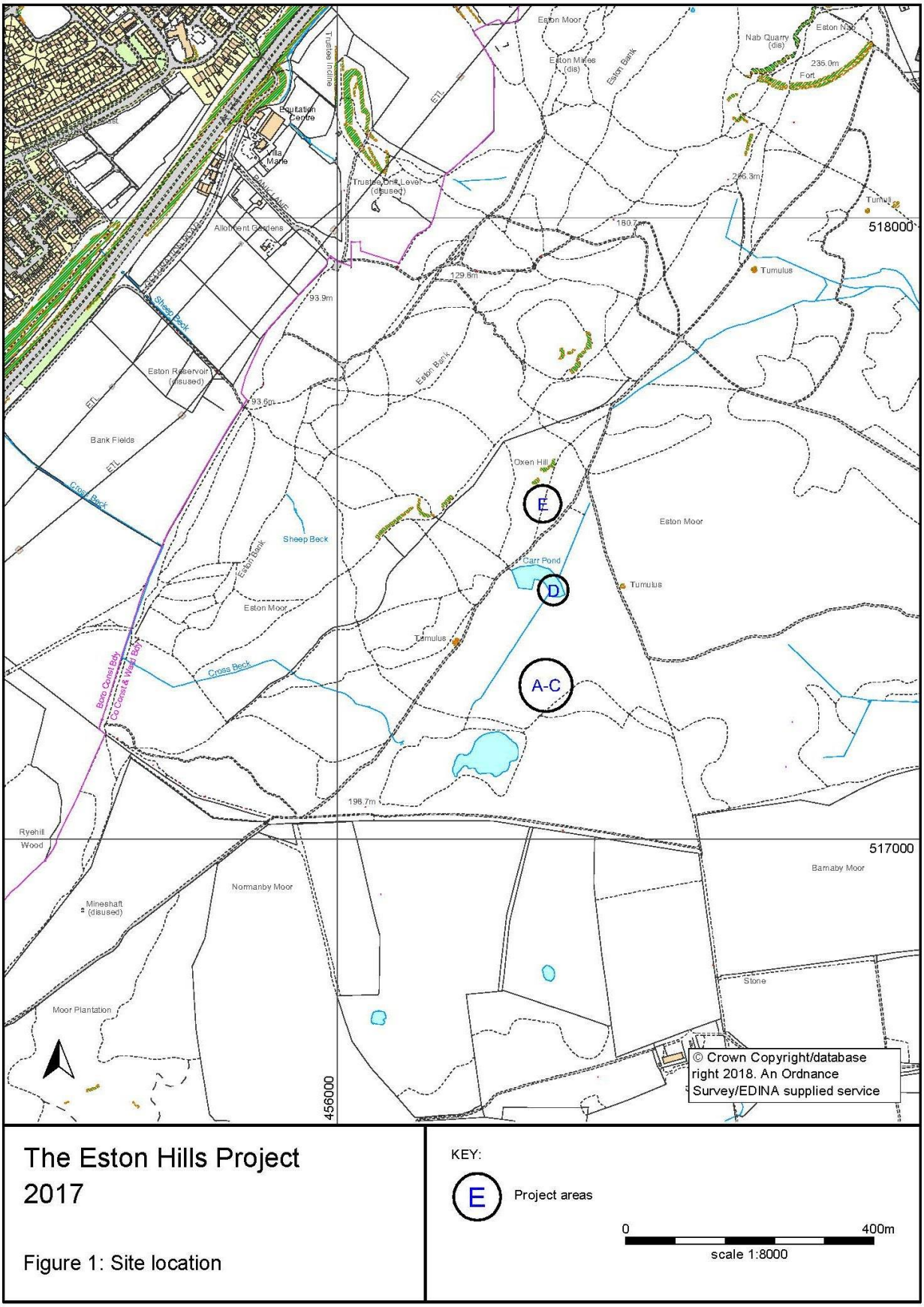
- Archaeology Gallery, Palace Green Library, Durham City
- Dorman Memorial Museum, Middlesbrough
- Great North Museum, Hancock, Newcastle-upon-Tyne
- Museum of Hartlepool, Jackson Dock, Hartlepool
- Ryedale Folk Museum, Hutton le Hole, North Yorkshire
- Sunderland Museum and Winter Gardens, Borough Road, Sunderland
- Swaledale Museum, Reeth, North Yorkshire
- Whitby Museum and Art Gallery, Pannet Park, Whitby
- Yorkshire Museum, Museum Gardens, York

Appendices

Contents

Eston Hills sunset © David Pye

Appendix 1 Test Pit Maps for 2017 Season Fieldwork



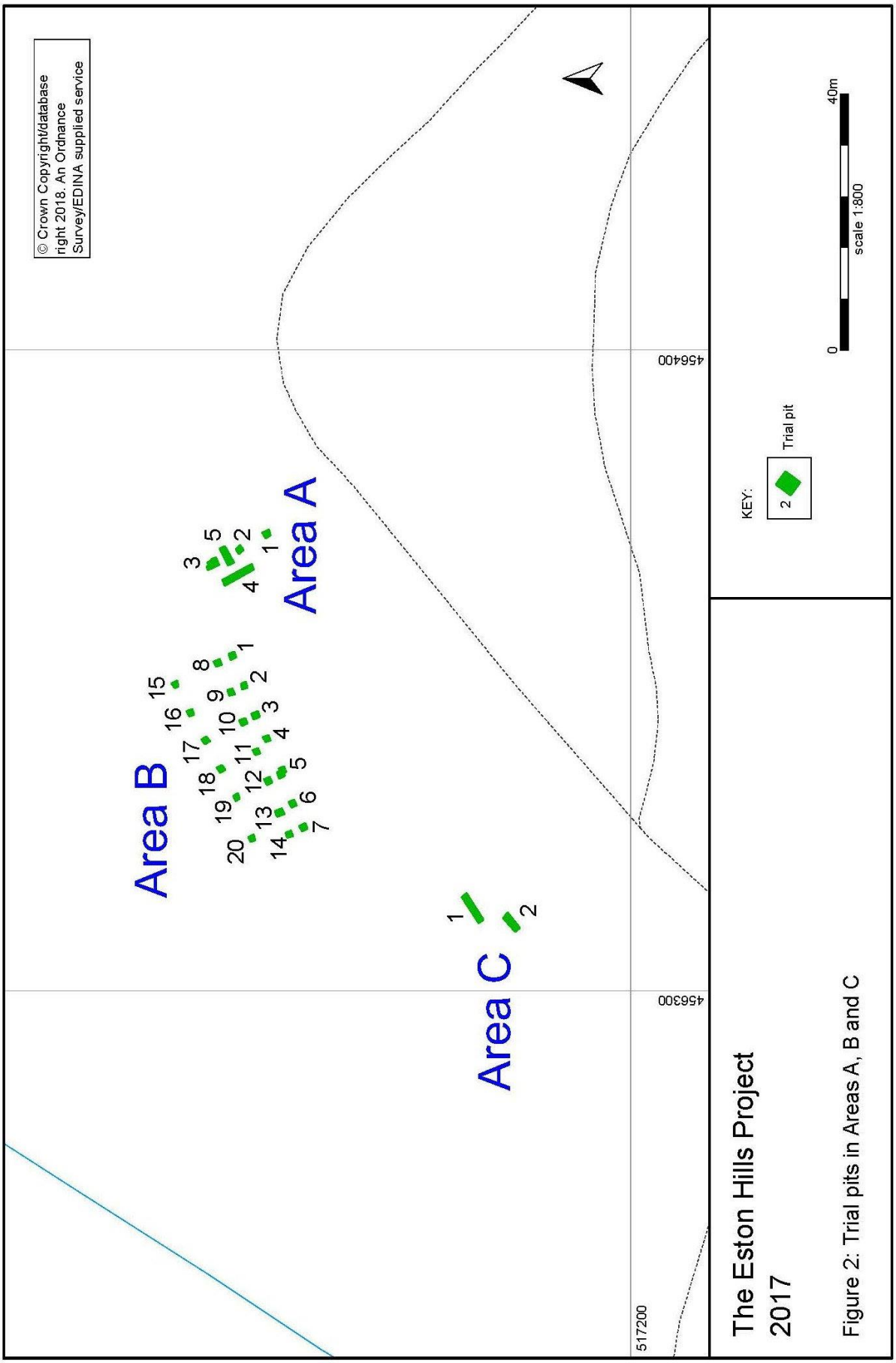
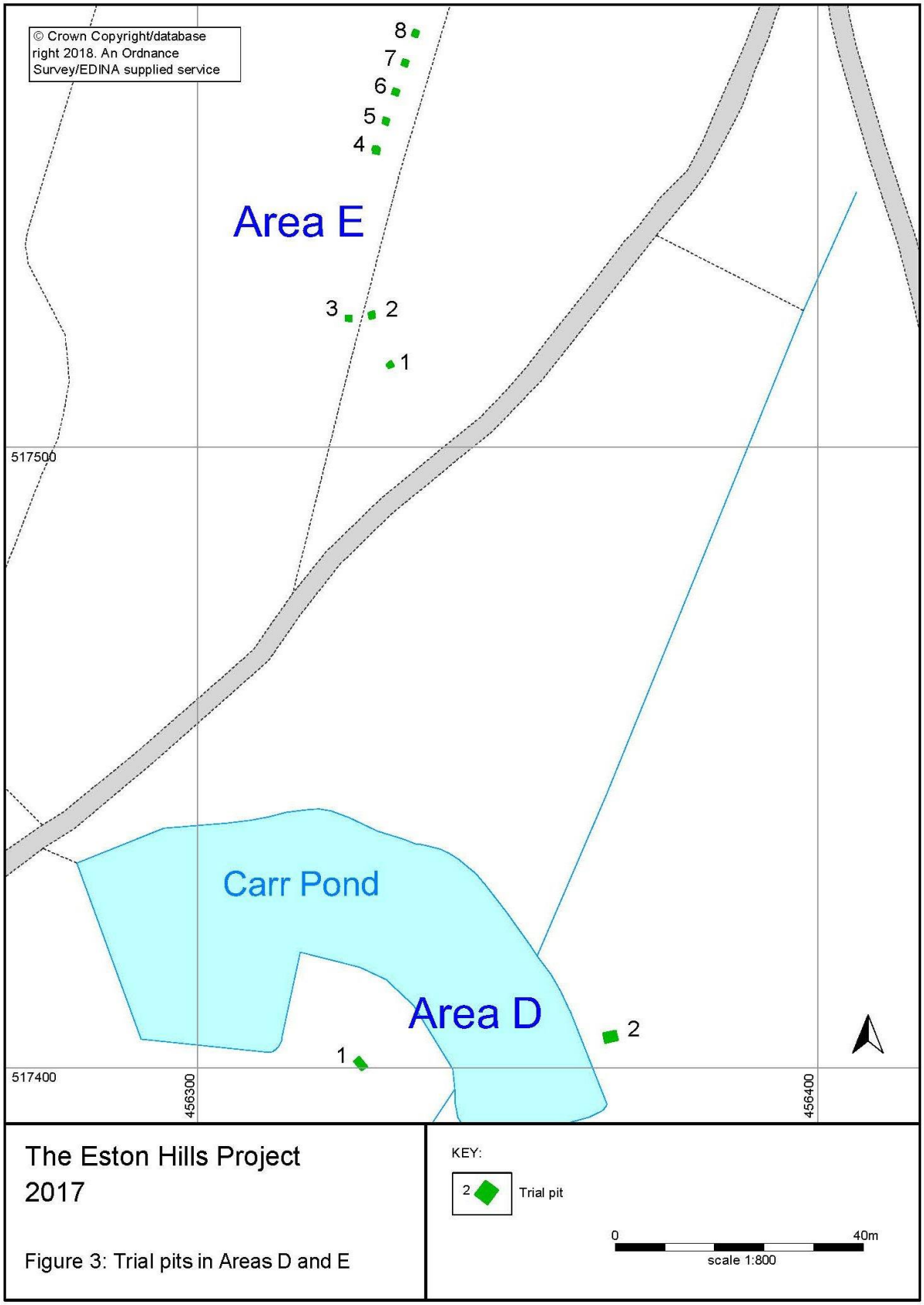


Figure 2: Trial pits in Areas A, B and C


© Crown Copyright/database right 2018. An Ordnance Survey/EDINA supplied service
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The Eston Hills Project 2017
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Appendix 2 Geophysical Surveys for 2017 Season Fieldwork

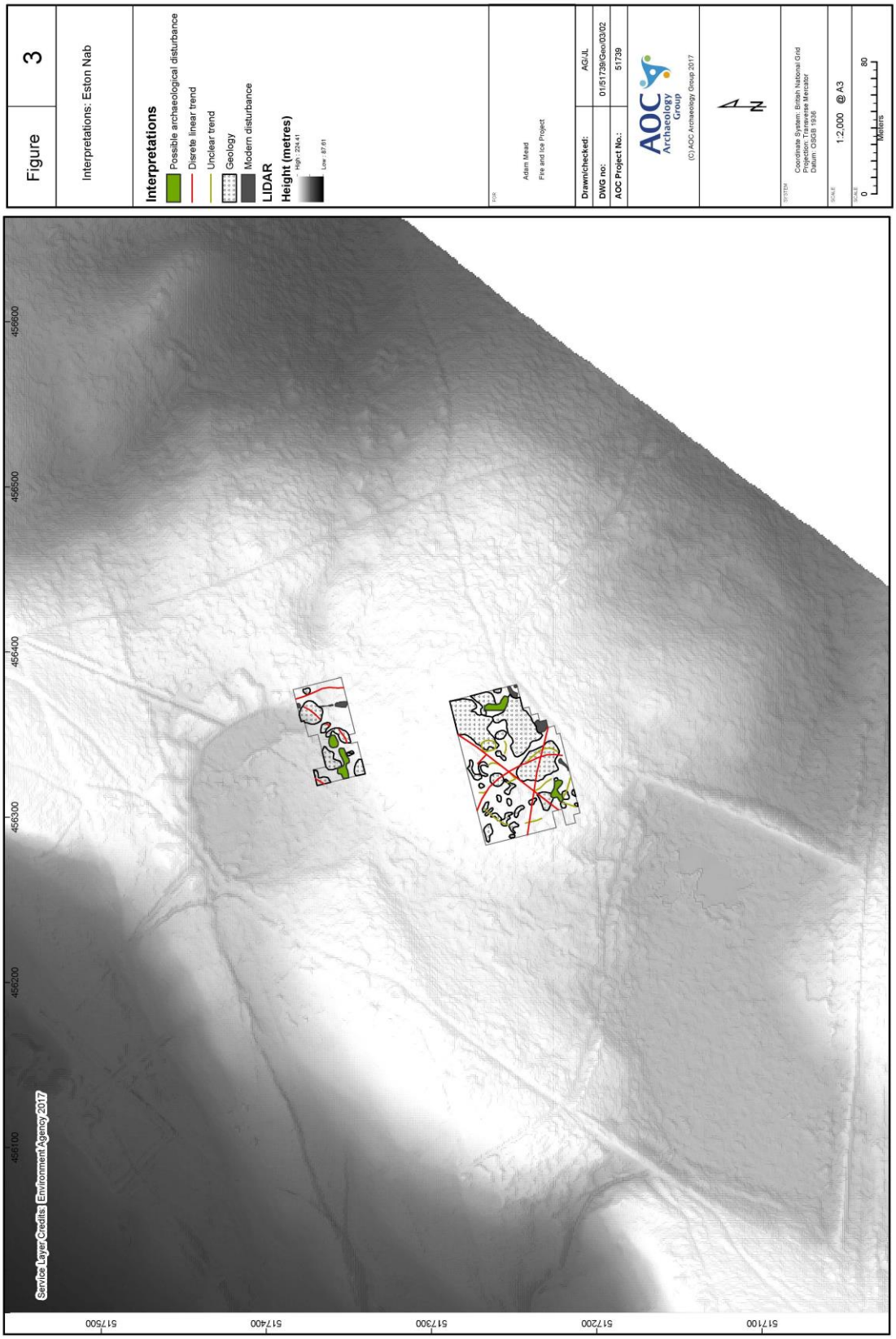
Figure 3
Interpretations: Eston Nab
Interpretations
Possible archaeological disturbance
Discrete linear trend
Unclear trend
Geology
Modern disturbance
LIDAR
Height (metres)
High: 224.41
Low: 87.61
FOR
Adam Mead
Fire and Ice Project
Drawn/checked:
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AOC Archaeology Group
(C) AOC Archaeology Group 2017
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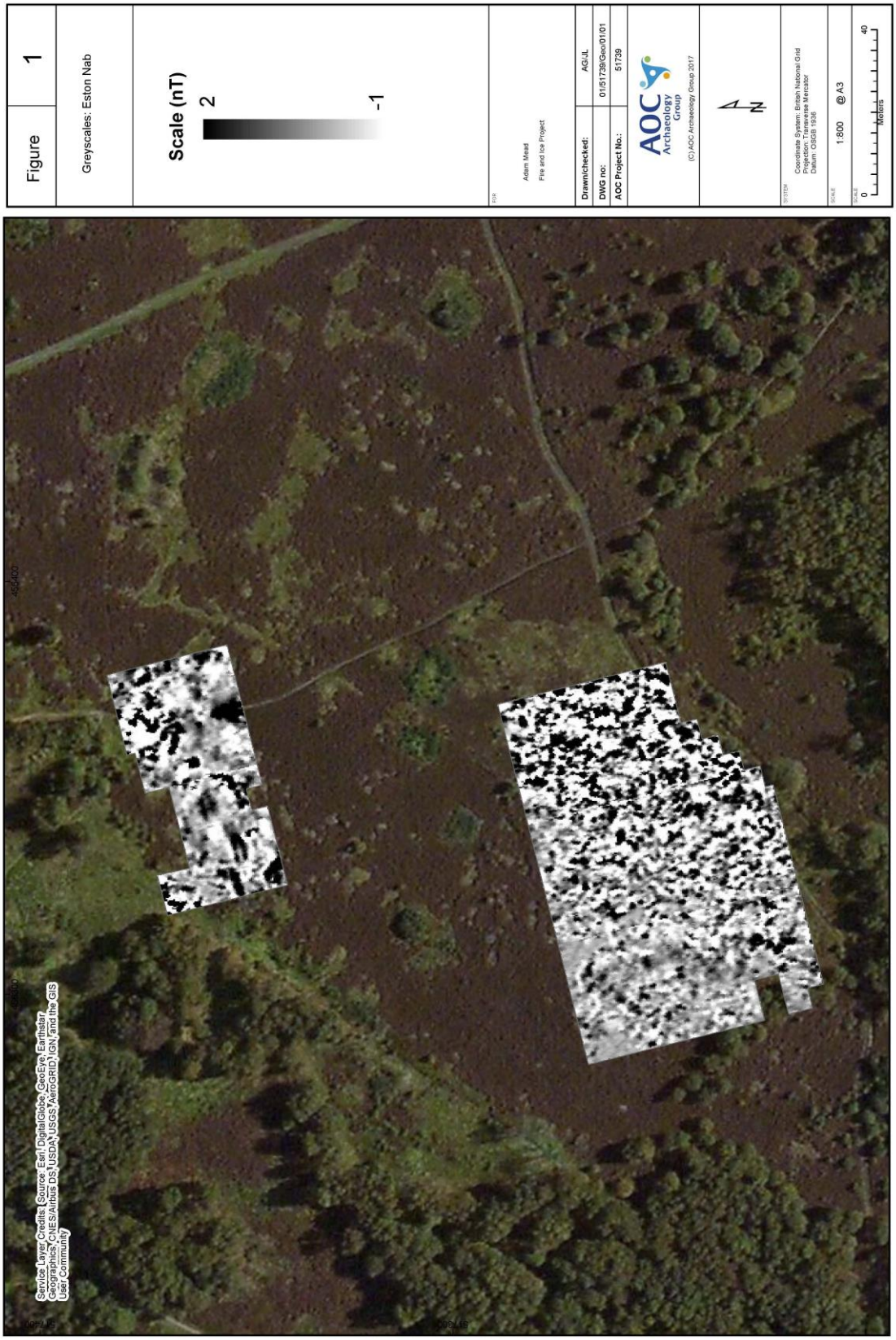
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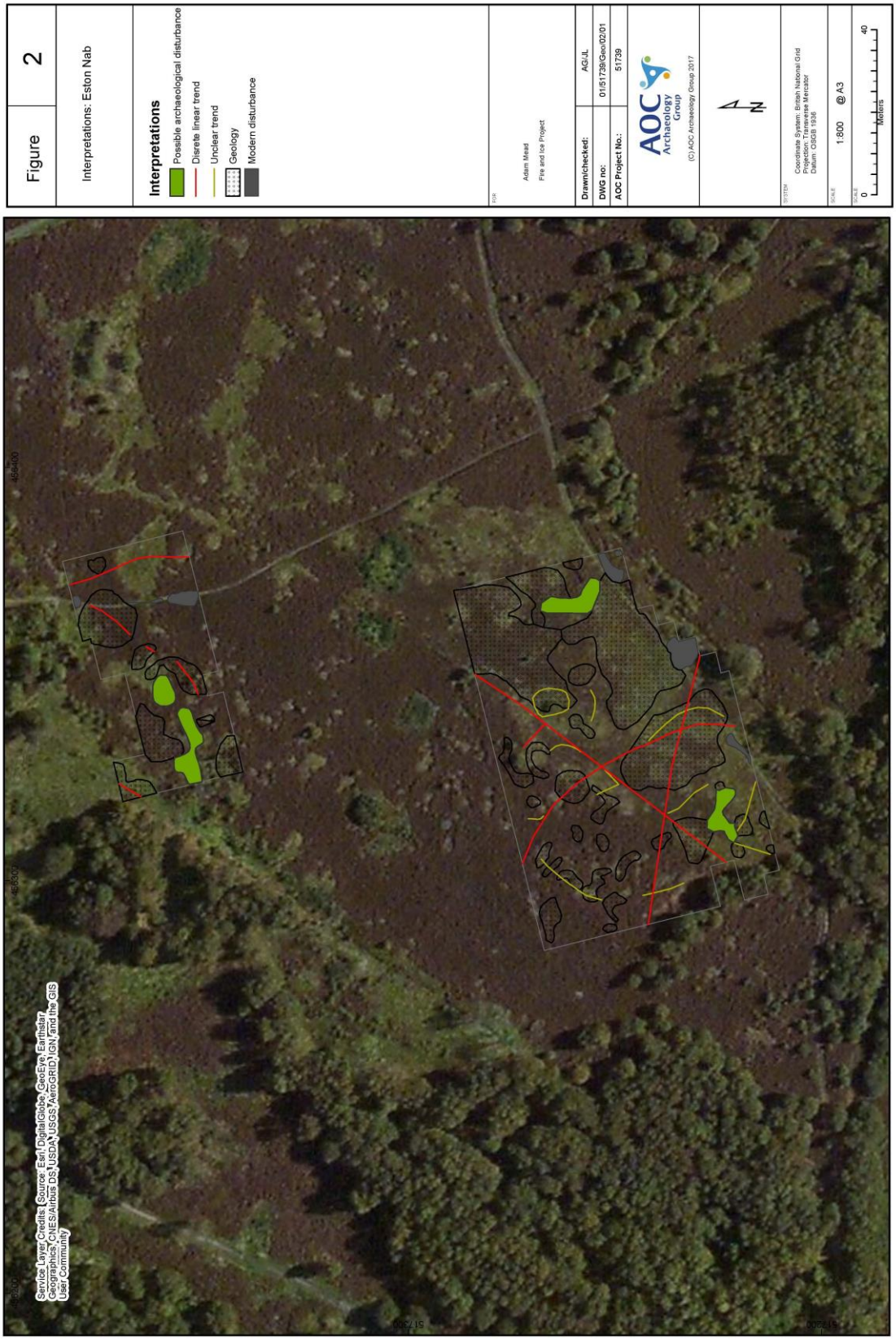
Figure 2
Interpretations: Eston Nab
Interpretations
Possible archaeological disturbance
Discrete linear trend
Unclear trend
Geology
Modern disturbance
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AOC Project No.:
51739
AOC Archaeology Group
(C) AOC Archaeology Group 2017
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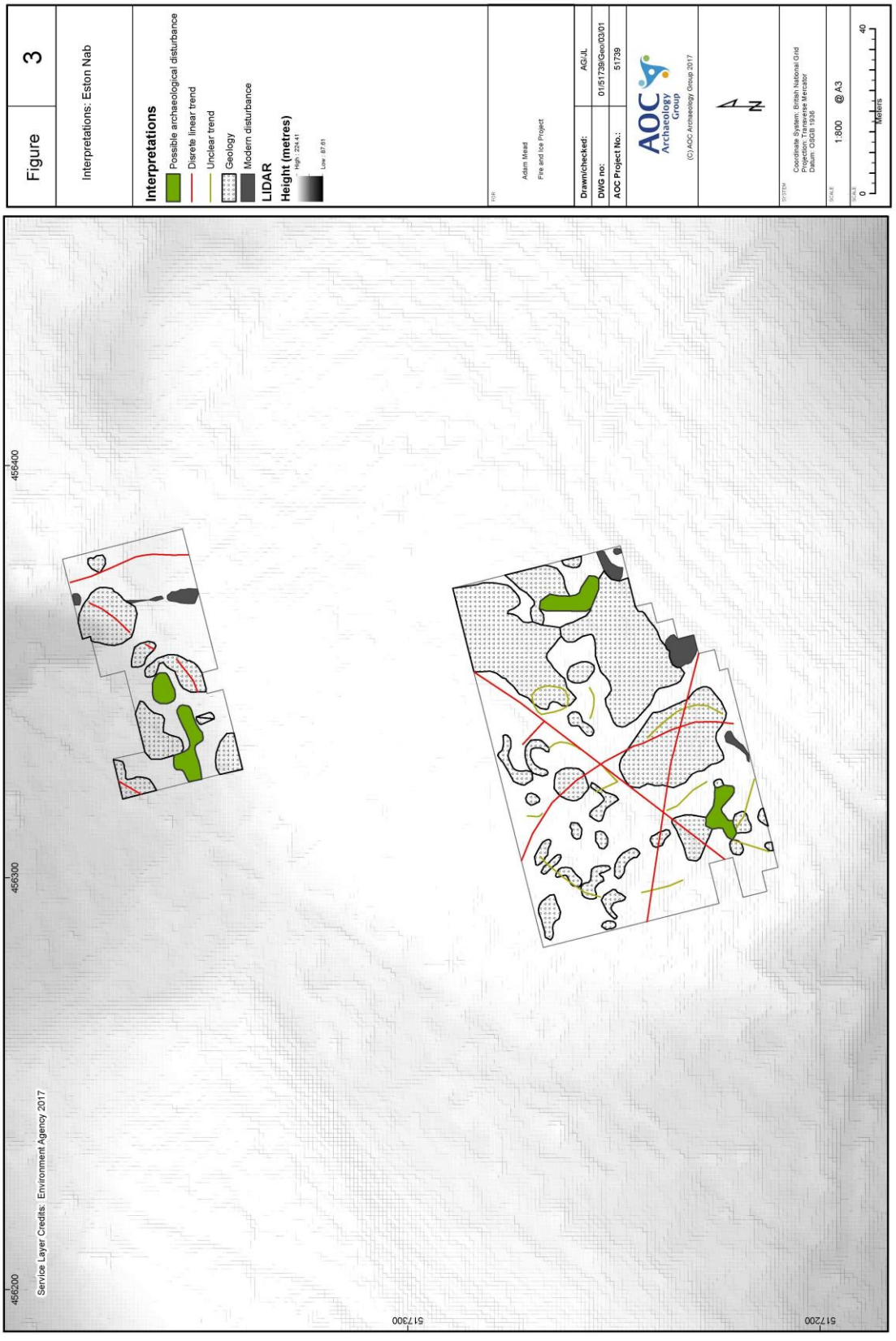
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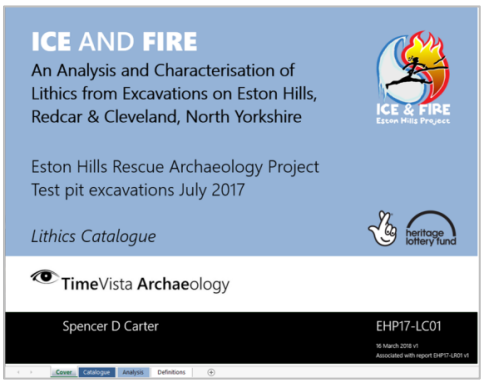
Appendix 3 Lithics Analysis

Contents

A3.1 Introduction



The present lithics catalogue is included here and is also available online in **PDF** ↳[13] and **Excel Spreadsheet** ↳[14] formats together with descriptive definitions. An analytical summary table is included in Section 4.2 (and Table 1), together with selective images (Figs. 31–38). Both Adam Mead's and Spencer Carter's lithics collections will be further analysed and included in the archaeological archive submission to Kirkleatham Museum or similar accredited repository.

The present catalogue represents a Post-Excavation Assessment (PXA) and, while relatively detailed, does not include a full suite of metrical data. However, this will be undertaken as further seasons add more finds to the record in order to fulfil both archival requirements (according to standards guidelines, see below) but also ultimate academic publication in a recognised, peer-reviewed, periodical or monograph series.

- **A guide to best practice in creation, compilation, transfer and curation** ↳[15] | AAF 2007
- **Standards for Deposition** ↳[16] | Museum of London web resources and PDF downloads

Scientific techniques

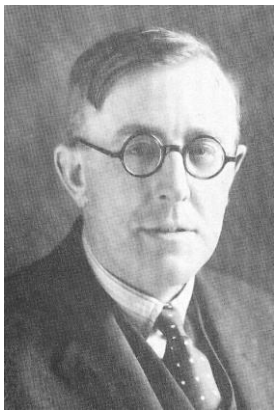
A flint artefact from earlier Eston Hills fieldwork has been analysed at Oxford University's Earth Sciences Department where doctoral candidate Tom Elliot has been using laser technology to characterise the chemical composition of flint and chert artefacts. Tom's research aims to establish whether links can be made between the primary stratigraphic deposits – flint occurs in or is derived from chalk geology, chert from limestone, formed in oceans millions of years ago – and the locations where artefacts are found. This can give us clues about human mobility in the past, from preferred sources of flint (Young 1984) to the locations where tools were manufactured, and ultimately deposited. The analysis technique is called *laser ablation* which removes a minute sample from the material and so is non-destructive.

Figure A3.1 Late Neolithic flint arrowhead.

The artefact is an impressive late Neolithic oblique ripple-flaked arrowhead. Although it is damaged, missing its tip and long tail, it is of particularly fine manufacture and raw material, closer to that encountered in East Yorkshire and East Anglia. Indeed, one might question whether it is purely a functional arrowhead or something prized by its owner and 'decommissioned'.

A3.2 Archaeologists and collectors of the 20th century

Beyond the 19-century antiquarians who made investigations, and 'dug' barrows (Ord 1846), there are two notable figures whose work and archives underpin the *ICE AND FIRE* project's objectives today. Frank Elgee was active in the early 20th century and his work was picked up by, amongst others, Don Spratt in the 1970-80s. A short review by Blaise Vyner (Vyner 1995, 1-2) connects these characters with Raymond H. Hayes who operated for most of his life around the North York Moors and Ryedale (Hayes 1988) when not posting letters. A celebration of Don Spratt appears in the **Spring 1993 Teesside Archaeological Society newsletter** ↳[17], shortly after his death. An important, and perhaps more enigmatic and eccentric gentleman, Mr H. Duffy, donated his finds from the 1970-80s wildfire landscape to Kirkleatham Museum. While little is known about him – he preferred solitude in the hills – and except for his diaries, his material confirms and supplements the work of previous and subsequent fieldworkers. His contributions are no less important than his forebears. Regrettably, there are some present-day collectors of artefacts who are less forthcoming.



Lastly, professional archaeologists such as Blaise Vyner (heritage consultant), Steve Sherlock (commercial and community archaeologist) and Peter Rowe (formerly of Tees Archaeology and now lead archaeologist for North Yorkshire County Council) have and continue to make important contributions, and freely offer advice to the project team, to further enhance our evolving understanding of the Eston Hills.

Frank Elgee | 1880–1944 Image top

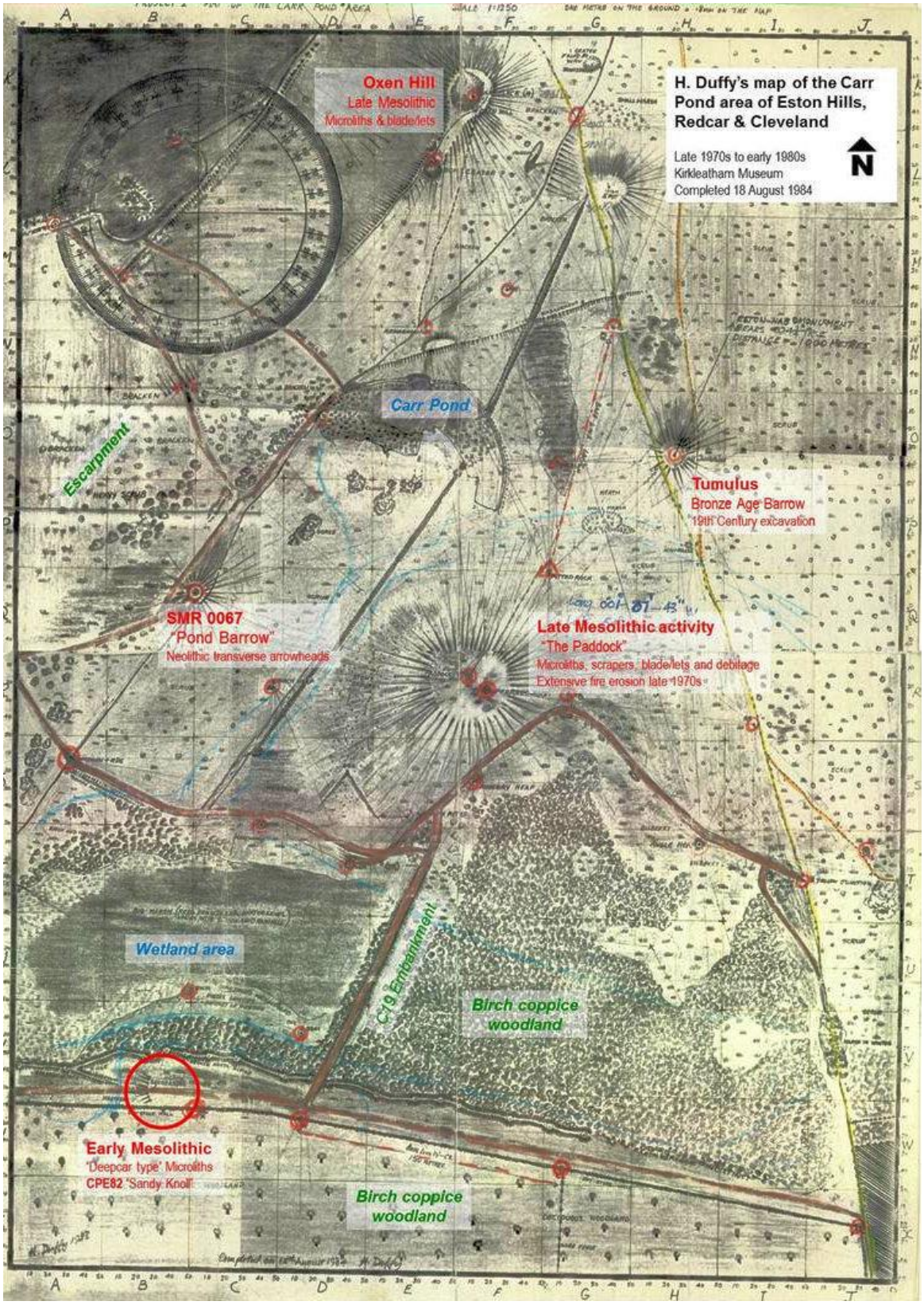
Founding curator of the Dorman Memorial Museum, Middlesbrough, and while often of ill-health, wrote formative volumes, evocative of his time, about the archaeology of north-east Yorkshire and Yorkshire as a whole (Elgee 1930; Vyner 1995).

Don Spratt | 1922–1992 Image centre

Originally from Hampshire, Don Spratt was an industrial chemist on Teesside until his retirement. He was an active member of the Teesside Archaeological Society and, amongst many important regional discoveries, was an active walker and fieldworker on the Eston Hills (Spratt 1993; Vyner 1995). Image: © Northern Echo.

H. Duffy Image bottom

Mr. H. Duffy from Redcar, about whom nothing is known except a box of flints, a map made with a sextant, two diaries and a photograph, all in the Kirkleatham Old Hall Museum. He seems to have been a quiet and eccentric gentleman who very much preferred his own company − he notes "troublesome student types" with binoculars, a vicar, a birdwatcher, and nuisance security guards at the ICI Wilton Castle headquarters. His map (below) was completely hand-made over probably a decade from the mid-late 1970s to 1984. He also, partly endearingly and partly frustratingly, made up names: street names for footpaths; called the burnt area where most flints came from "The Paddock"; and invented "Stonegate Farm" which doesn't exist as a farm − it's two stone gateposts (stonegate) and a ploughed field (farm). "Rosebay Heap" is where he built a small cairn as his central "datum" point. It was constantly "vandalised" by the "wandering youths", ironically.



H. Duffy's map of the south-eastern quadrant of the Eston Hills, created with a sextant, is accurate and here over-labelled with archaeological and topographic features mentioned in this report. Regrettably, the surviving manuscript items do not appear to include precise provenance locations for Duffy's lithic finds recovered after significant vegetation fires around "The Paddock" in the early 1980s.

Image courtesy of Kirkleatham Museum archives, Redcar & Cleveland, and kindly scanned by Tees Archaeology

A3.3 Previous collections

Prehistoric activity on the Eston Hills has benefited from many years of aerial photographic reconnaissance, field walking, surveys and excavation through the late 20th century (Fig. A3.2). Vyner (1991) focussed on the more prevalent Bronze Age monuments, but included a summary of lithic finds that reflect activity from the later Mesolithic through the Neolithic and Bronze Age periods. Both the hillfort itself and a number of burial mounds under threat of erosion have received specific attention (Vyner 1988). Crawford (1980) produced an earlier survey of Bronze Age burial mounds within the county of Cleveland that included the Eston Hills, and Smith (1994) has published an extensive catalogue for north-east Yorkshire. Elgee (1930) recorded his observations of burial mounds, cairns, possible field lynchets, and sporadic flint finds, as well as his own excavations at the hill fort earlier in the century. In the mid-19th century, J.W. Ord (1846) conducted excavations of the more prominent barrows on the uplands.

This appendix, section A3.3 primarily, summarises lithic finds made by previous fieldworkers and collectors, including the unpublished assemblage from Osborne Rush (Barnaby Moor) housed in the archives of the Dorman Museum, Middlesbrough and documented in the writer's university dissertation (Carter 1987), likely early Mesolithic material in the Spratt collection, also Dorman Museum, as well as the mixed-period Duffy collection in the Kirkleatham Museum, Redcar & Cleveland (examined in 2012). More detailed analysis of these, as well as systematically-recorded surface finds by Adam Mead and Spencer Carter, will be the subject future research work.

What follows is an assessment of areas on the Eston Hills where flint and chert artefacts have been noted over the last century or more. Detailed catalogues are in preparation, across a number of collections and archives, in order to assess future potential and to provide a single, accessible record against the project's present and ongoing discoveries.

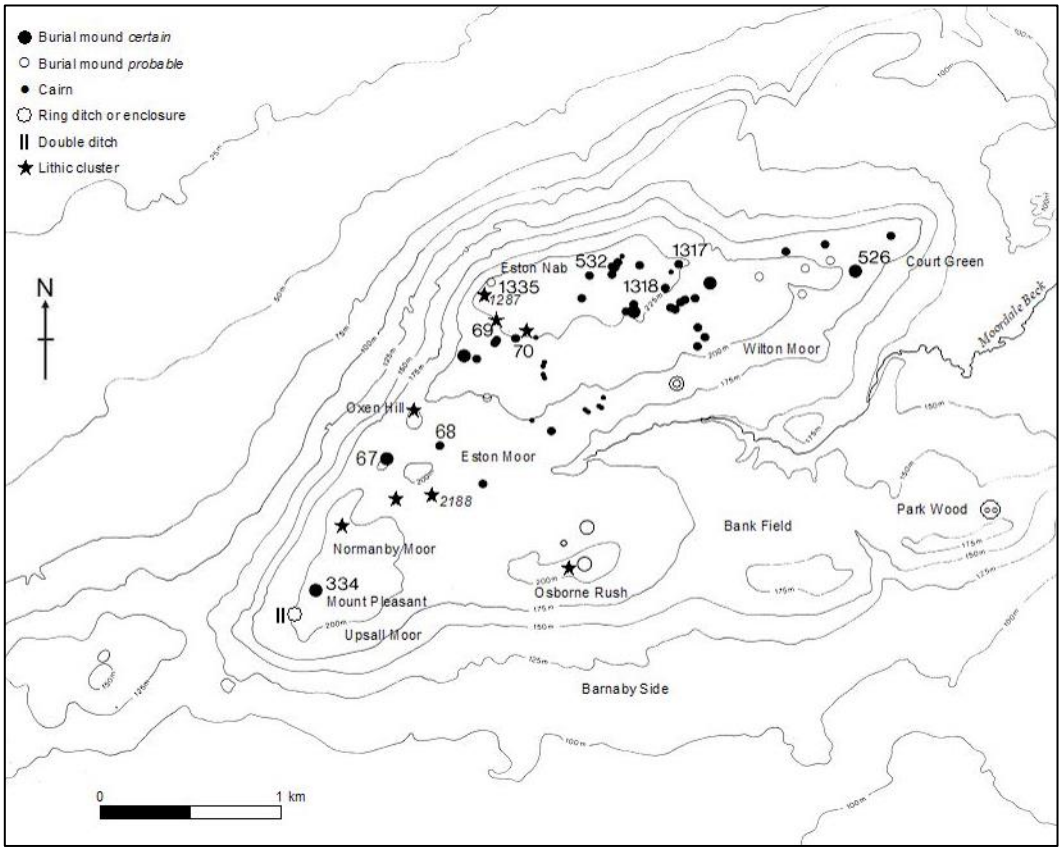


Figure A3.2 Prehistoric monuments on Eston Hills, Cleveland (modified, after Vyner 1991). Numbers are Sites & Monuments Record (SMR) references (lithics in italic).

Upsall Moor

NGR: NZ 557 163 (General) | Altitude: c. 180m to 217m O.D. at Mount Pleasant

Upsall Moor lies at the south-western end of the Eston Hills and, in this account, is notionally separated from Normanby Moor to the north by a track running west-to-east to, the south of the Mount Pleasant burial mound (Fig. A3.3). Lithics recovered by the writer and others comprise largely isolated finds. In addition, aerial photography in the 1970s revealed a possible circular enclosure and north-south double ditch alignment at NZ 557 164. No diagnostically dateable artefacts were recovered from field walking at the time, although some 'poor-quality' flints were recovered from the vicinity of the cropmark enclosure. Mount Pleasant itself, is a large kerbed burial mound (and scheduled ancient monument) partly excavated in the 1950s and contained a 'late Southern British' beaker vessel recovered from beneath a cup-marked stone (Smith 1994, 50).

Figure A3.3 View towards the prominent Mount Pleasant kerbed burial mound excavated in 1959, towards the south-west.

Image: S. Carter 2012

Meridian Airmaps photograph no. 11.67.116 showed a circle of 12m outside diameter with a double ditch 45m long lying north-south, 12m to the west of the circle. The two ditches are 6m apart. Finds included two fragments of rubbing stones, eight pot boilers, calcined flint and burnt sandstone. *Yorks. Archaeol. J.* 43 (1971), 192 (D.A. Spratt).

Normanby Moor

NGR: NZ 558 167 (General) | Altitude: c.200m to 217m O.D. at Mount Pleasant

Normanby Moor lies at the south-western end of the Eston Hills and is here notionally separated from Eston Moor to the north-east by the edge of the plantation running west-to-east from NZ 560 170 to NZ 565 170. The lithics recovered from the moor by the writer and others comprise a loose cluster of diagnostically Late Neolithic to Early Bronze Age flints, including a noteworthy discoidal flint knife, within the ploughed fields at NZ 56 17. Occasional flints also occur to the south-west, around the burial mound of Mount Pleasant at NZ 5582 1658 (SMR 334; Smith 1994, 50). It is conceivable that a settlement site existed in the area centred on NZ 560 169.

Eston Moor

NGR: NZ 565 175 (General) | Altitude: c. 200m to 242m O.D. at Eston Beacon

Eston Moor occupies the greater portion of the north-west quadrant of the Eston Hills, rising to its maximum altitude at Eston Beacon which provides extensive views to the north over the Tees estuary towards Hartlepool and the Durham coast, and to the south towards the northern edge of the North York Moors and Cleveland Hills. The lithics recovered by the writers provide yet more evidence for activity spanning the Late Mesolithic through the Neolithic and into the Bronze Age either as isolated finds or, occasionally, as specific clusters.

From the Late Mesolithic (or perhaps transitional to Early Neolithic based on the character of the assemblage and the presence of chert items) a site comprising flint and chert pieces lies a short but significant distance from that previously recorded at NZ 5631 1710 (SMR 2188). Both these lithic scatters are on dry sandy ridges above a

substantial waterlogged area. This may have provided a clearing where animals gathered and took water in an otherwise dry upland in much the same way as clearings were exploited, even managed, on the high moors (Simmons & Innes 1988, 10; Spratt & Simmons 1976, 198). The likelihood is that only a small proportion of the lithics from this site have been revealed in the area of an eroding footpath, In addition, the survival of organic material at the edges of the wetland zone is a tantalising possibility. Lithic finds from H. Duffy's collection in Kirkleatham Museum demonstrate Late Mesolithic, Neolithic and Bronze Age signatures from around "The Paddock" and Carr Ponds (Figs. A3.5 and A3.6).

Figure A3.4 A large mound, SMR 67, adjacent to the Carr Ponds wetland, viewed towards the south.

Image: S. Carter 2012

Late Mesolithic flints have also been recovered from the proximity of Eston Nab itself adding to the existing evidence for a site or sites on and around this promontory (Vyner 1988, 82−3). The partially excavated site at Highcliff Nab (Waughman 1996) and four sites field-walked on the Upleatham Hills (Spratt et al. 1976; B. Webb-Ireland 2012 pers comm.) are relatively close and equally prominent in the landscape.

For the Neolithic, a particularly fine, single-barbed oblique arrowhead is noteworthy (Fig. A3.1). It may be associated with the postulated "pond barrow" or "cremation cemetery" (SMR 67; Fig. A3.4) noted by Crawford (1980, 31) along with a small number of other tools (possibly two additional oblique arrowheads of varying quality), but interestingly no debitage. As Vyner has suggested (1991, 42) based on excavations at Street House, Loftus (1988), the appearance of some barrow-like monuments may indeed mask their original function, or earlier activities at the same place. Finely worked flint 'knives' of possible Neolithic or Early Bronze Age date, including two distinctive 'beaked' examples, occur elsewhere on the moor, and occasional leaf-shaped arrowheads have been recorded previously. Diagnostically Bronze Age pieces documented here include a small number of barbed and tanged arrowhead fragments and the ubiquitous thumbnail scraper, accompanied by an assortment of utilised flakes and blades.

Carr Pond and Barnaby Moor, Eston Hills | Early Mesolithic Activity

NGR: NZ5615 1705 (Accurate) | Altitude: 200m O.D.
Site Code: CPE82 | Mid Elevation (wetland) | Assemblage with possible Early Mesolithic components

Topography & Vegetation: Mid-elevation moorland, a northerly outlier of the North York Moors. Acidic peat moorland with partial birch re-generation around a sheltered wetland area with permanent open water. While the exact location is at a lower altitude than the edge of the Eston Hills a short distance to the north, that escarpment offers clear views over the Tees estuary towards the offshore peat beds around Hartlepool (Waughman 2005), and as far as the south Durham coast and west towards the south Durham uplands and Pennine foothills, and south to Highcliff Nab.

Recovery: From surface of eroded footpath on a low, sandy ridge to the south of a Carr Pond wetland area: 1982; 1990.

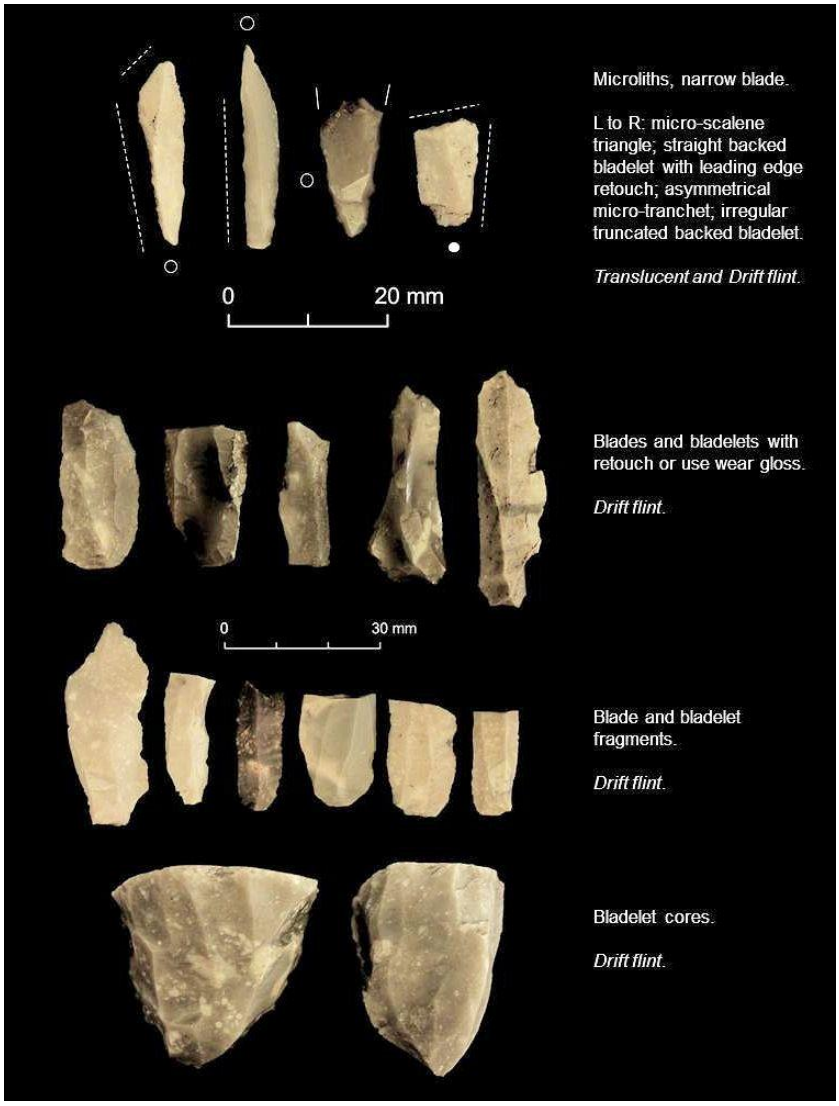


Figure A3.5 Late Mesolithic flints from the H. Duffy collection at Kirkleatham Museum.

Image: © S. Carter

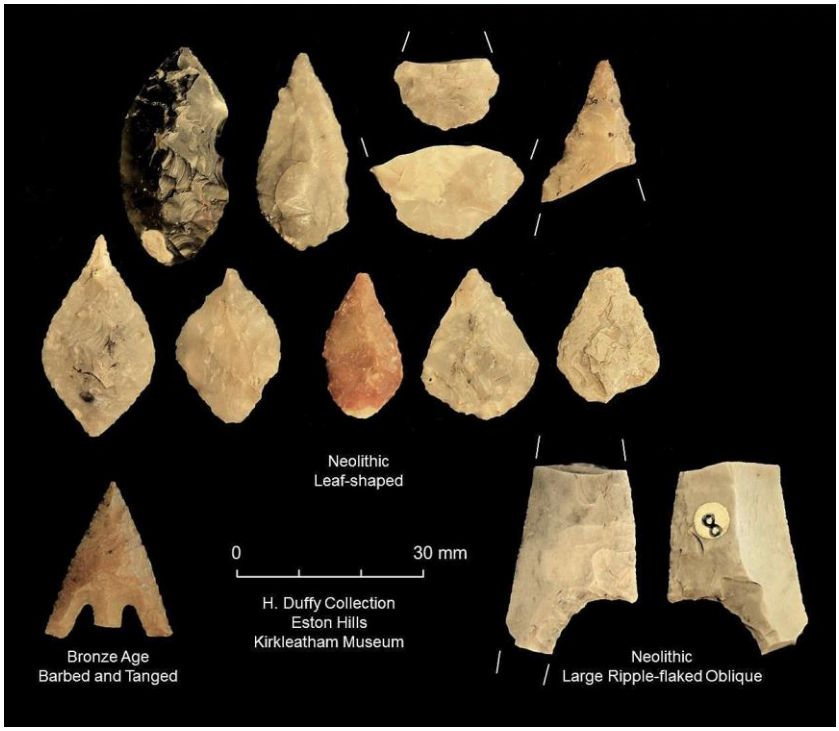


Figure A3.6 Early Neolithic, Late Neolithic and Bronze Age flint arrowheads from the H. Duffy collection at Kirkleatham Museum.

Image: © S. Carter

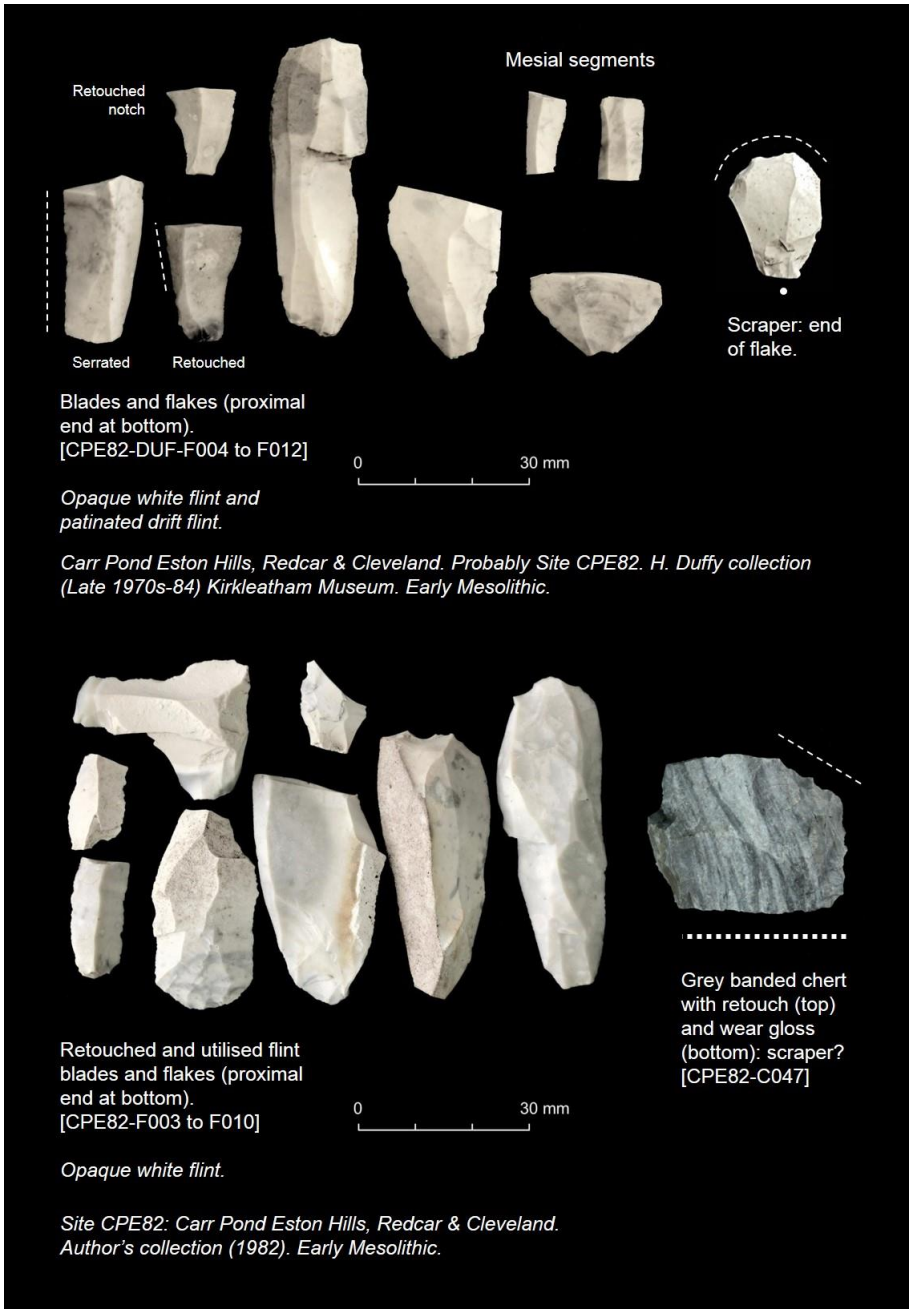


Figure A3.7 Lithics from the Carr Pond wetland area, comparing H. Duffy's flints (top) with those of the writer, likely from the same location (also referring to Duffy's notebook entries and map).

Image: © S. Carter

Assemblage Character:

The small assemblage gives the impression of being of mixed Early broad-blade and possibly Late Mesolithic narrow-blade character (Figs. A3.7 and A3.8) and includes a banded-chert lump which has been struck (denticulated retouch and edge gloss, scraper?) and a brown chert retouched bladelet. The movement of glaciers in the last ice age means that the closest availability of chert as a raw material is the Vale of Mowbray and Pennine dales and not the area around the Cleveland Hills, lower Tees valley boulder clays nor the east-coast drift and beach deposits (Bridgland et al. 2011). A piece of indeterminate ore may have been modified (strike-a-light) but also could be natural. Unusually for the area, the majority of flint is white, with some patinated drift flint including one red-brown example.

The microlith is the only significantly retouched piece and is of a large size as compared with the later Mesolithic narrow-blade industries of north-east England and may be of broad blade (Deepcar) tradition (Chatterton 2005, Conneller et al. 2016).

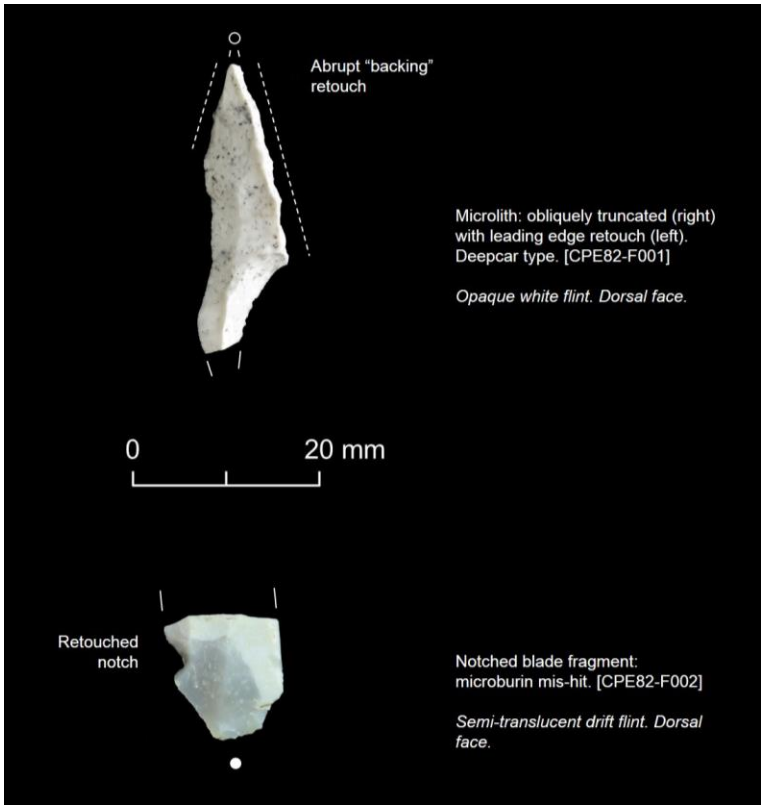


Figure A3.8 Early Mesolithic broad-blade microlith of Deepcar type with leading edge retouch, and a possible microburin mis-hit. Site CPE82: Carr Pond Eston Hills, Redcar & Cleveland. Author's collection (1982).

Image: © S. Carter

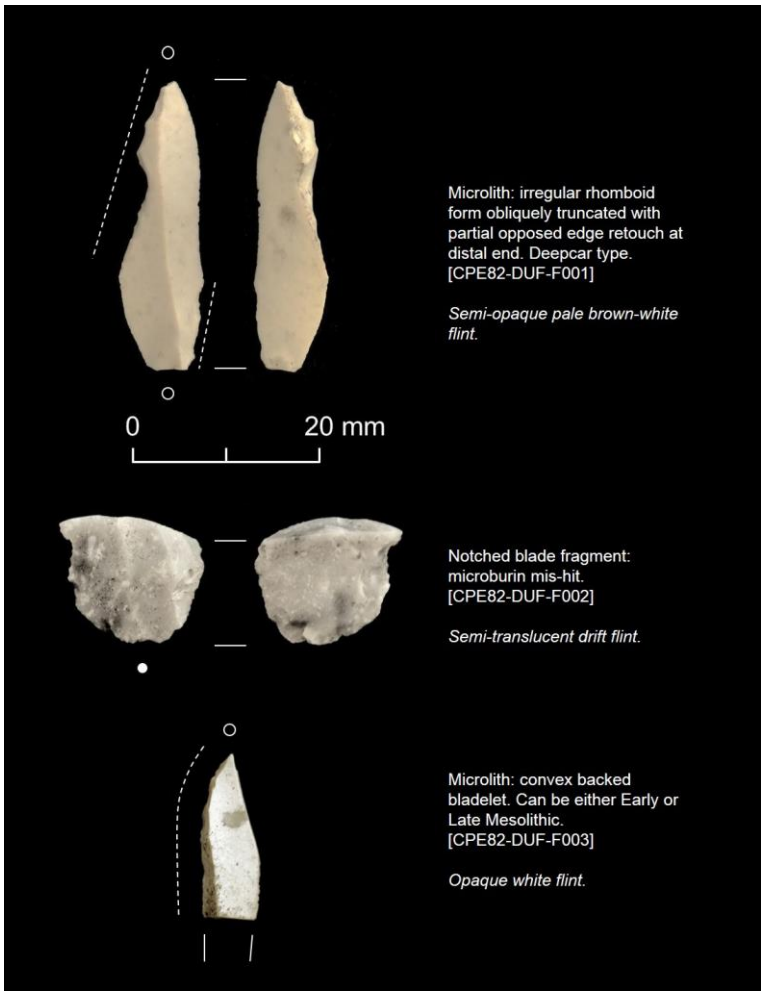


Figure A3.9 Early Mesolithic broad-blade microlith, a possible microburin mis-hit, and a convex-backed bladelet microlith of either early or late Mesolithic date. Likely from Site CPE82: Carr Pond Eston Hills, Redcar & Cleveland.
H. Duffy collection (Late 1970s-84) in Kirkleatham Museum.

Image: © S. Carter

While no cores were recovered, perhaps due to distance from material source (Young 1987), the intention appears to have been blade production, with some relatively large examples and an assortment of faceted bladelet segments and proximal/distal ends which have been horizontally or obliquely snapped. The assemblage is entirely soft hammer technology. Some flints were visible in the side section of the footpath, suggesting that the eroded area represents only a portion of the site (see below).

Assemblage:

CPE82 Flints n=46, chert n=2, stone n=1
Blade soft hammer technology, 62% of the flint is white ('Wolds'). The remainder is patinated drift flint with a small number of burnt/calcined pieces. The microlith is of white flint. There are a number of large utilised blades (majority) and a lesser proportion of flakes, and two scrapers. The suggestion is of finished tools or pre-prepared blanks (hence the mis-hit). Fig A3.7 shows a selection of utilised and retouched blades and flakes: CPE82-F003 to F010 and C047 (chert).

Microliths:

Broad-blade obliquely blunted point with abrupt retouch along one entire edge and part of the opposing edge and tip (Fig. A3.8 CPE82-F001). There is also a proximal-end notched blade (mis-hit) (Fig. A3.8 CPE82-F002). Similar artefacts from the H. Duffy collection are shown for comparison, although they cannot be absolutely provenanced (Fig. A3.9).

Pollen Core:

Moordale Bog c. 1 km from the site (see Fig. A3.10, below):

'Moordale Bog is a longer and much better preserved profile that contains evidence for most of the Mesolithic from the early Holocene to after the elm pollen decline that occurs regionally at about 5000 BP. This site therefore may provide data for the whole of the Mesolithic period except the first millennium of the Early Mesolithic.' —Waughman, M. (2012).

From: J.B. Innes. Pers comm 2014
There seems to be a hiatus at what looks like the elm decline, with a 6000 years gap. The Mesolithic record ends at about 6200 radiocarbon BP. There is some opening after about 6800 radiocarbon BP, with a consistent plantain curve and the start of heather. The alder rise date of 7000 radiocarbon BP looks good, but the last thousand years of the Mesolithic isn't there.

Current State:

No flints or even small chips were visible across the eroded footpath (2012-17).

Other Collections:

(1) Kirkleatham Museum, Redcar and Cleveland
The H. Duffy (see above) collection from Carr Pond, Eston Hills in the mid-1970s to early 80s, documented in a number of diaries, notebooks and hand-made map. The collection comprises more than 300 pieces including at least two narrow blade microliths along with later prehistoric material (cf. Osborne Rush, Barnaby Moor. The collection is not yet catalogued or reported and may represent a palimpsest of activity areas and/or multiple sites and find spots (P. Rowe pers comm.). Fig. A3.9 CPE-DUF-F001 microlith; F002 notched blade (mis-hit); F003 microlith. Fig A3.7 shows blades, flakes and a scraper as comparison with the author's assemblage. Fig. A3.5 shows diagnostically Late Mesolithic flints as a comparison with posited Early Mesolithic flints.

(2) Dorman Museum, Middlesbrough
Mixed collections including Don Spratt (Fig. A3.11) collection from "Barnaby Moor" (alternative name for Carr Pond locale) under Accession Nos A1976/76; /78; /80; /81. Fig. A12 shows two microlith fragments (80/11; 80/16) a third unfinished (?) microlith (76/3), discoidal scraper (78/11) and utilised blade (81/24).

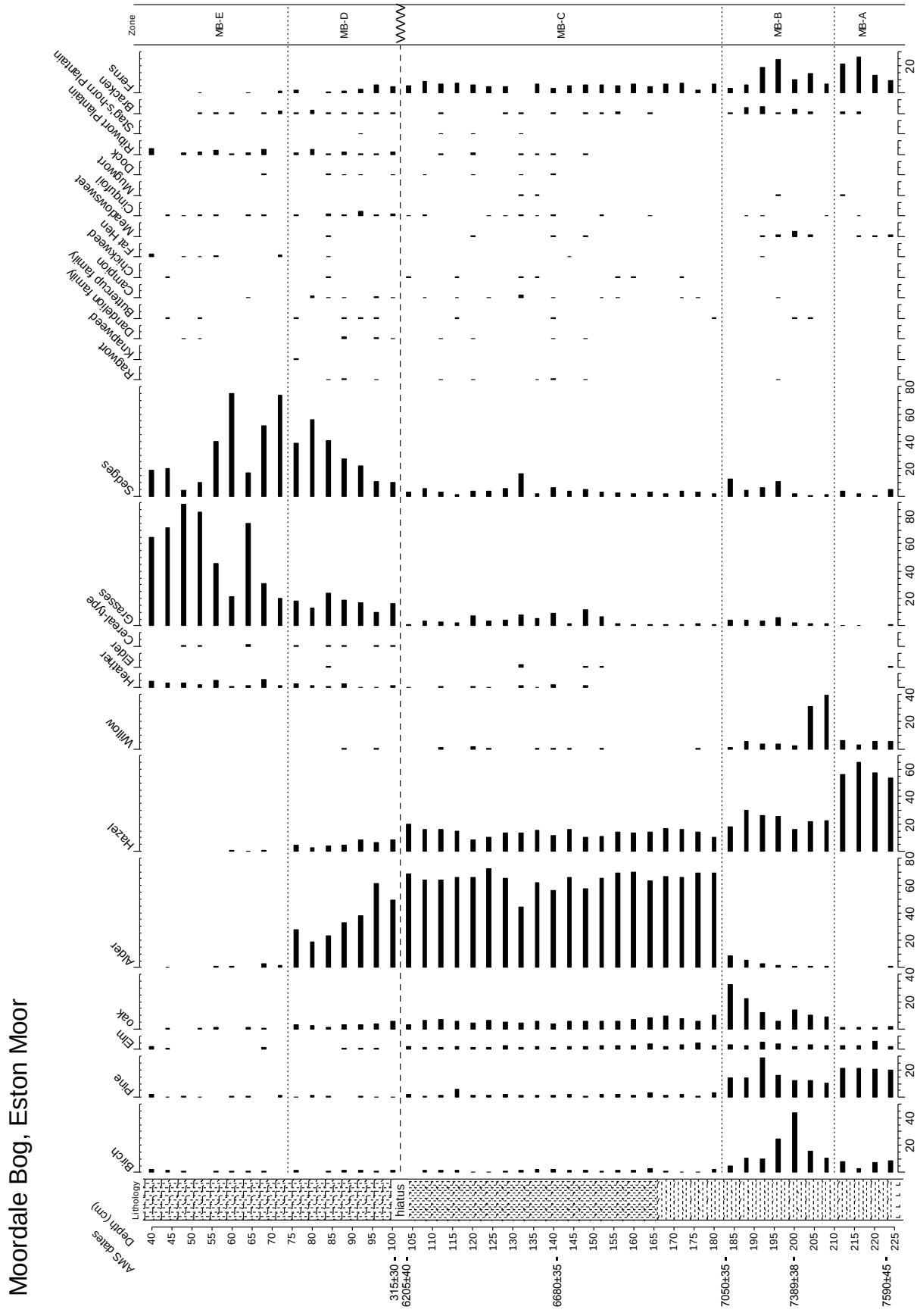


Figure 3.10. Pollen core diagram from Moordale Bog, Eston Moor NZ 170 172 (J.B. Innes 2014 pers comm.).

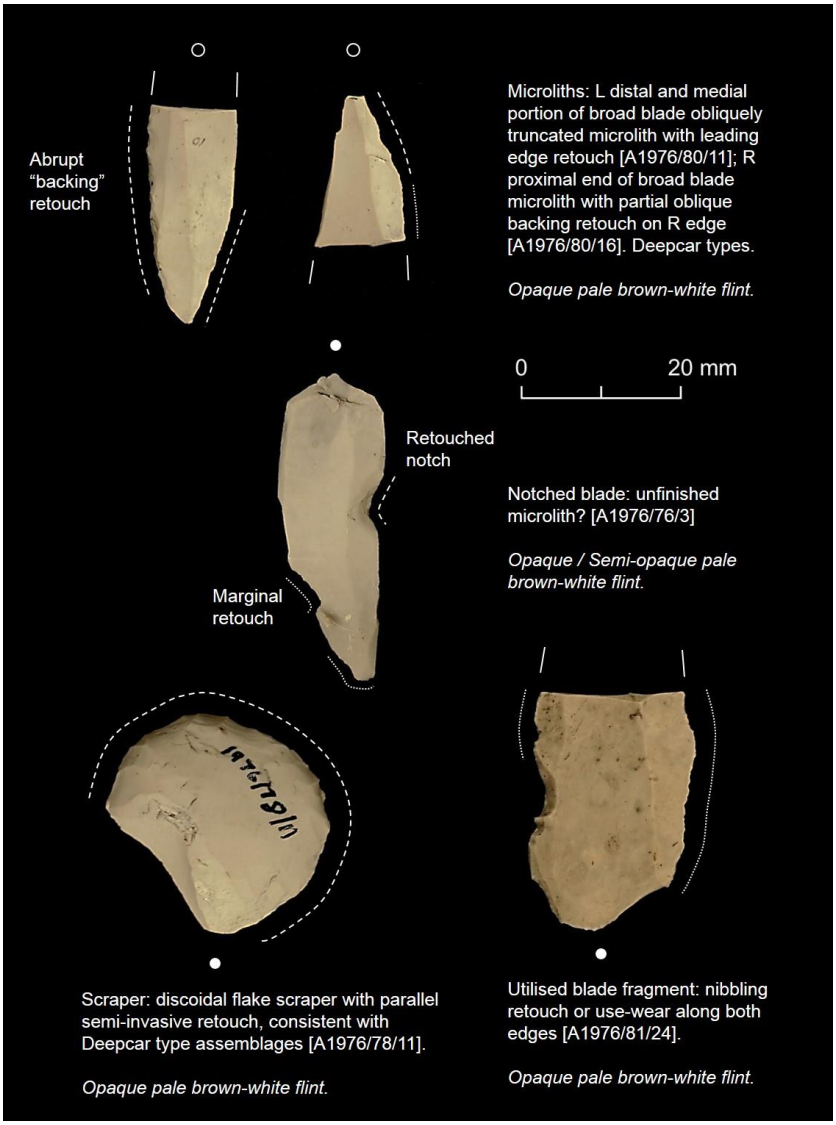


Figure A3.11 Early Mesolithic flint artefacts from Barnaby Moor in the D.A. Spratt collection (late 1970s) at Dorman Museum, Middlesbrough (Accession A1976).

Image: © S. Carter

Affinities: Slender obliquely-blunted points with leading edge partial retouch at Deepcar, Yorkshire (Radley & Mellars 1964, Fig 5 No 47 (tanged), also 48-50). 95% of assemblage was white flint with small proportion of black shiny chert and brown flint. Similar types from Central Pennines are at Lominot (Ibid. Fig 8 No 18) and Warcock Hill North (No 19). Slender obliquely blunted points, but without leading edge retouch, from Star Carr, North Yorkshire (Clark 1954, Fig 35 No 30 (scalene triangle, noting the tapering distal "tail") and the "irregular" No 27). Similar microlith forms with leading edge retouch have been noted at Highcliff Nab (Waughman 1996; 2017), Danby Beacon, Osmotherly Stones (P. Rowe pers comm.), Money Howe, Topcliffe on Swale*, Vale of Mowbray* (Little Holtby, Aiskew Grange 4, Aiskew Grange Quarry, Warren House F3), and Gainford (River Tees near Darlington; T. Laurie pers comm.). The Seamer Carrs (Stokesley) single example found by Don Spratt, never illustrated and now lost, was an isosceles triangle of Early Mesolithic form reminiscent of Star Carr types.

* Chatterton (2005) with >88% white 'Wolds' flint (one piece of chert from Warren House 3).

Osborne Rush, Barnaby Moor

NGR: NZ 572 167 (Accurate) | Altitude: 200m O.D.

The assemblage is housed in the collections of the Dorman Museum, Middlesbrough and comprises 204 pieces mostly of flint but with chert and quartz items present. The site seems to have drawn the attention of Elgee subsequent to his publication of *Early Man in North-east Yorkshire* (1930) since an annotation in his personal copy refers to the site as being Mesolithic in character. Spratt, Goddard and Brown (1976, 25) relocated the site during field walking in 1970 and recovered around 100 flints "mostly debitage similar to that on the Upleatham sites". They concluded that the site probably represented more than one diagnostic prehistoric period. The area of flint occurrence is situated close to enclosure ditches which have appeared in aerial photographs but which proved virtually ploughed out during test excavations by Cleveland County Archaeology Section. The flints remaining in the Dorman Museum's collection, recorded by the writer in 1985-86 (Carter 1987), appear to be ostensibly of Neolithic (later) to Bronze Age character. The occurrence of transverse-type arrowheads and heavily retouched pieces bear out this observation. The assemblage as a whole may well be multi-period, although the loss of some items, particularly debitage, seems probable.

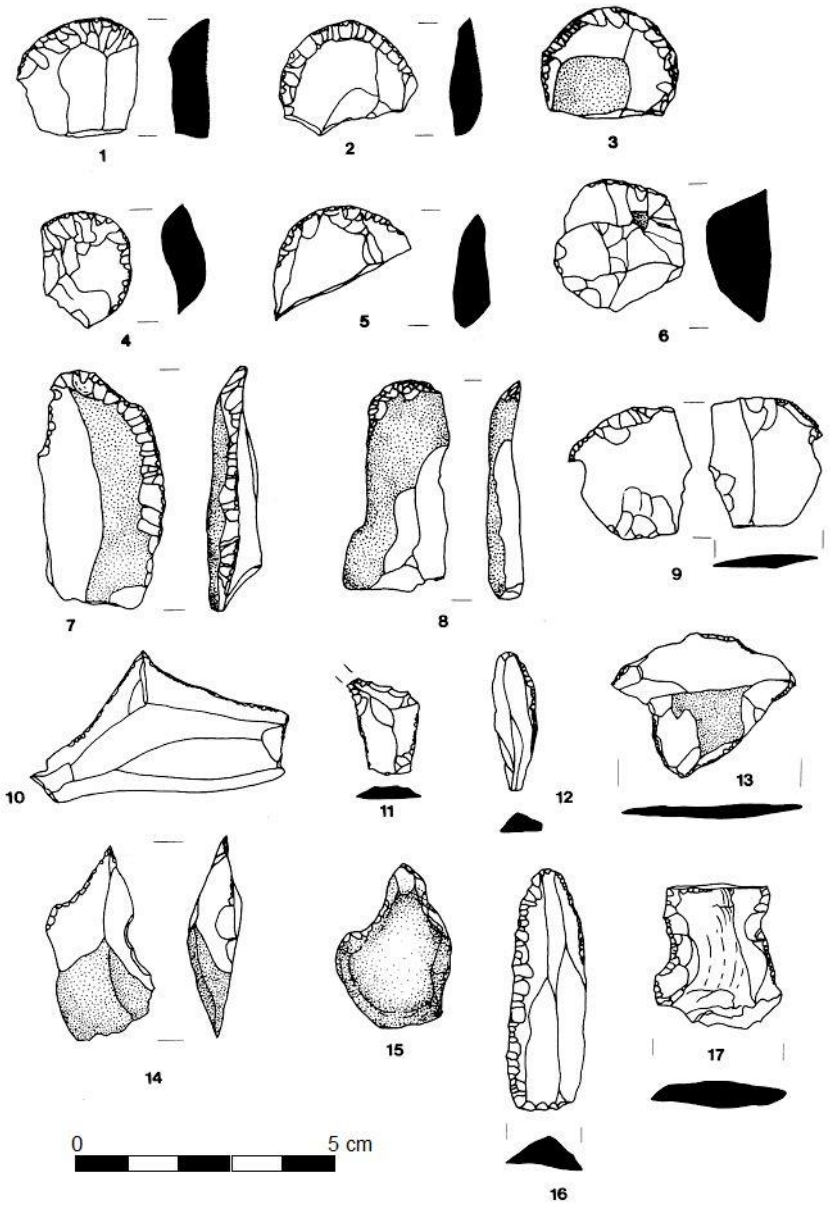


Figure A3.12 Lithic artefacts from Osborne Rush, Barnaby Moor. Image: © S. Carter

Catalogue

Summary table

Category	*Quantity*	*% of Tools.*
TOOLS		
Scrapers	21	28.8
Arrowheads (transverse)	2	2.7
Microliths (rod?)	1	1.4
Denticulates	4	5.5
Borers and awls	10	13.7
Retouched knives	5	6.8
Misc. retouched and utilised	30	41.1
Subtotal Tools	73	
DEBITAGE		
Cores	17	
Flakes unbroken	33	
Flakes broken	30	
Irregular chips and lumps	51	
Subtotal Debitage	131	
TOTAL	204	

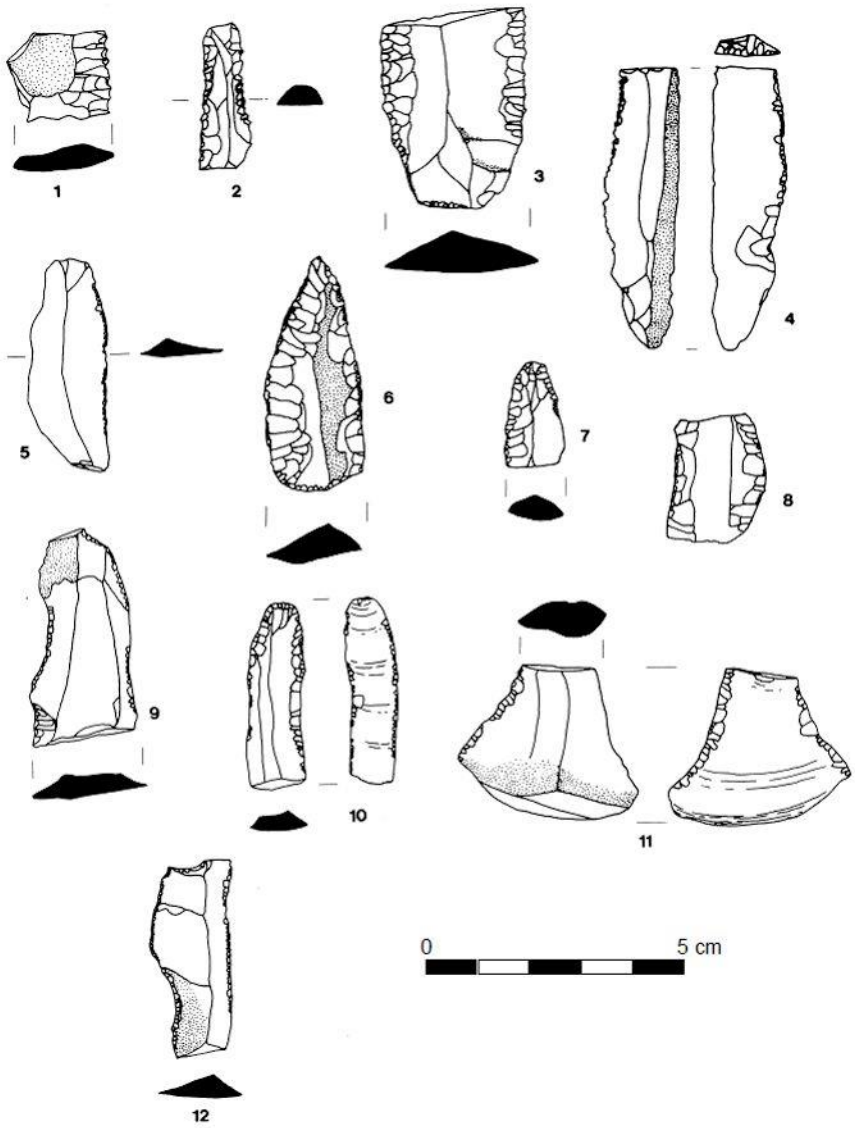


Figure A3.13 Lithic artefacts from Osborne Rush, Barnaby Moor. Image: © S. Carter

Raw material and condition

Colour and Type	*Quantity*	*% of Sample*	
FLINT			
Grey/fawn flint	48	51.6	
Grey flint	5	5.4	
Grey/brown flint	16	17.2	
Grey/black flint	1	1.1	
Fawn flint	5	5.4	
Toffee brown flint	1	1.1	
Brown flint	3	3.2	
Red/brown flint	2	2.2	
Orange/brown flint	1	1.1	
Cream/fawn flint	2	2.2	
White patinated flint	1	1.1	
Cream patinated flint	2	2.2	
Burnt flint	1	1.1	
OTHER			
Black chert	4	4.3	
Quartz	1	1.1	
TOTAL	93		Sample based on all utilised pieces.

Cortex Colour and Type	*Quantity*	*% of Sample*	
Hard white	5	29.4	
Hard brown	7	41.2	
Hard fawn	2	11.8	
Hard grey	2	11.8	
Soft white	1	5.9	
TOTAL	17		Sample based on all cores.

The assemblage was recovered from arable land and it is therefore likely that some damage and chipping has occurred as a result of plough impact and movement within the soil.

Typology

Cores

Cores have been classified according to Clark *et al.* (1960, 216). The table below presents summary data with a detailed catalogue following.

Core Types	*Quantity*	*% of Total*	*Notes*
Ai	0	0	One platform, flakes removed all round
Aii	5	29.4	One platform, flakes removed part way round
Bi	2	11.8	Two platforms, parallel
Bii	1	5.9	Two platforms, one at oblique angle
Biii	1	5.9	Two platforms, one at right angle
C	8	47.1	Three or more platforms
D	0	0	Keeled, flakes struck from two directions
E	0	0	Keeled, with one or more platforms
TOTAL	17		

1. Class Aii core, grey/brown flint. 31 x 27mm.
2. Class Aii core, grey/brown flint. 33 x 28mm.
3. Class Aii core, grey/brown flint retaining hard brown cortex. 31 x 22mm.
4. Class Aii core, grey/fawn flint retaining hard brown cortex. 37 x 26mm.
5. Class Aii core, red/brown flint retaining soft white cortex. 41 x 29mm.
6. Class Bi core, grey/brown flint. 34 x 24mm.
7. Class Bi core, grey/fawn flint retaining hard white cortex. 32 x 39mm.
8. Class Bii core, grey/fawn flint. 40 x 30mm.
9. Class Biii core, grey/brown fling. 26 x 26mm.
10. Class C core, grey/fawn flint retaining some hard white cortex. 31 x 28mm.
11. Class C core, grey/fawn flint. 31 x 25mm.
12. Class C core, grey/brown flint. 35 x 28mm.
13. Class C core, grey/fawn flint retaining hard brown cortex. 42 x 30mm.
14. Class C core, grey/fawn flint. 20 x 46mm.
15. Class C core, black/grey flint retaining some hard white cortex. 53 x 39mm.
16. Class C core, grey/fawn flint. 40 x 29mm.
17. Class C core, matt black chert. 26 x 48mm.

Scrapers

The tables below present summary data with a detailed catalogue following.

Scraper Types	*Quantity*	*% of Total*	*Notes*
A	4	19.0	End of flake
B	1	4.8	End of blade
C	0	0	Side of flake
D	4	19.0	Side and end of flake
E	9	42.9	Ovate "thumbnail"
F	0	0	Worked on four sides
X	3	14.3	Indeterminate fragment
TOTAL	21		

Scraper retouch angle	*Quantity*	*% of Total*
< 40 deg	3	14.3
< 55 deg	6	28.6
< 75 deg	11	52.4
75+ deg	1	4.8
TOTAL	21	

1. Class A scraper, burnt flint, damaged, distal end retouched. Retouch angle 65 deg.
2. Class A scraper, matt black chert, distal end of flake retouched. L 28mm W 19mm T 7mm. Retouch angle 48 deg.
3. Class A scraper, grey/fawn flint, distal end of flake retouched. L 23mm W 25mm T 8mm. Retouch angle 50 deg. Fig. A3.12, 1.
4. Class A scraper, fawn flint, damaged. L 30mm W 26mm T 4mm. Retouch angle 70 deg.
5. Class B scraper, grey/fawn flint with some hard white cortex, distal end of blade retouched. L 43mm W 22mm T 6mm. Retouch angle 60 deg. Fig. A3.12, 8.
6. Class D scraper, burnt flint, distal end and both edges of flake retouched. L 21mm W 23mm T 9mm. Retouch angle 80deg.
7. Class D scraper, grey flint with some hard grey pitted cortex, retouched along left side and obliquely across distal end. L 38mm W 34mm T 14mm. Retouch angle 55 deg.
8. Class D scraper, brown/fawn flint, semi-invasive retouch on distal end and side. L 45mm W 26mm T 12mm. Retouch angle 52 deg. Fig. A3.12, 7.
9. Class D scraper, grey/brown flint, retouched obliquely at distal end and both edges. L 26mm W 37mm T 9mm. Retouch angle 25 deg.
10. Class E scraper, brown/grey flint. L 28mm W 26mm T 7mm. Retouch angle 70 deg. Fig. A3.12, 6.
11. Class E scraper, toffee brown flint, damaged. L 26mm W 26mm T 7mm. Retouch angle 60 deg. Fig. A3.12, 5.
12. Class E scraper, grey/fawn flint, damaged. L 31mm W 15mm T 8mm. Retouch angle 35 deg.
13. Class E scraper, fawn flint with hard self-coloured cortex. L 39mm W 37mm T 10mm. Retouch angle 50 deg.
14. Class E scraper, grey/fawn flint. L 22mm W 20mm T 8mm. Retouch angle 68 deg. Fig. A3.12, 4.
15. Class E scraper, fawn/grey flint with some hard brown cortex, damaged. L 22mm W 22mm T 6mm. Retouch angle 47 deg.
16. Class E scraper, brown flint with some hard white cortex, hinge fractured flake with bulb removed. L 24mm W 28mm T 6mm. Retouch angle 53 deg. Fig. A3.12, 3.
17. Class E scraper, grey/fawn flint, damaged. Retouch angle 57 deg. Fig. A3.12, 2.
18. Class E scraper, grey/fawn flint, damaged. Retouch angle 62 deg.
19. Class X scraper, grey/fawn flint, damaged. Retouch angle 55 deg.
20. Class X scraper, fawn flint, fragment. Retouch angle 37 deg.
21. Class X scraper, grey/brown flint, damaged. L 25mm W 33mm T 13mm. Retouch angle 71 deg.

Arrowheads

Two Neolithic oblique-type arrowheads are present in the assemblage. Green (1980) notes that these forms are rather rare in north-east Yorkshire, being more prevalent in the Yorkshire Wolds.

1. Transverse arrowhead, grey/fawn flint. Fig. A3.12, 9.
2. Transverse arrowhead, grey/fawn flint, damaged. Fig. A3.12, 13.

Microliths

A single possible microlith occurs in the assemblage. While not unexpected in transitional or Early Neolithic assemblages, one might question whether this allows the assemblage as a whole to be considered multi-period with a Mesolithic component.

1. Irregular blade, grey/fawn flint, blunting retouch along right edge and distal end, bulb removed to form a backed bladelet. L 28mm, W 9mm. Fig. A3.12, 12.

Denticulates

This category includes serrated and multiply-notched flakes and blades.

1. Blade, grey/brown flint with some hard cream cortex, right side is serrated, distal end broken. L 58mm W 14mm. Fig. A3.13, 4.
2. Blade segment, burnt flint, serrated along one edge. L 18mm W 20mm. Fig. A3.13, 1.
3. Blade, grey/brown flint, bulbar end missing, serrated along both edges. L 30mm W 11mm. Fig. A3.13, 2.
4. Flake, brown/grey flint, serrated along both edges and transversely along distal end. L 40mm, W 29mm. Fig. A3.13, 3.

Awls and piercers

1. Flake, fawn flint, retouched on right side to form a point, distal end missing. L 52mm W 30mm.
2. Flake, fawn/grey flint, with two utilised points and edge retouch. L 32mm W 41 mm, Fig. A3.13, 10.
3. Flake, grey/fawn flint, distal end retouched on both sides to form a point. L 40mm W 20mm. Fig. A3.13, 14.
4. Flake, grey/fawn flint with hard white cortex, bulbar end worn and damaged. L 38mm W 18mm.
5. Blade, fawn/grey flint, bulb present with fine point on distal end. L 25mm W 18mm.

6. Flake, grey/fawn flint, obliquely broken at distal end to form a point, wear visible on both edges. L 28mm W 17mm.
7. Flake, grey/brown flint, bulb removed, distal end retouched to form a point. L 34mm W 20mm.
8. Flake, grey flint with yellowish, smooth, shiny cortex, retouched to form a point. L 29mm W 18mm.
9. Blade, grey/brown flint, bulb removed, retouched obliquely at distal end to form a point (broken). L 21mm W 13mm. Fig. A3.12, 11.
10. Pebble, quartz, retouched on two edges to form a point. L 34mm W 22mm. Fig. A3.12, 15.

Retouched blades

1. Blade, grey flint, bulb extant, semi-invasive retouch along both edges forming a point at the distal end. L 48mm W 21mm. Fig. A3.13, 6.
2. Blade, orange/brown flint, bulb extant, retouched along both sides. L 50mm W 15mm. Fig. A3.12, 6.
3. Blade, grey/fawn flint with self-coloured, hard cortex and faint bulb, distal end if missing, extensive retouch along both edges. L 29mm W 25mm. Fig. A3.12, 17.
4. Blade, white patinated flint, bulbar end, distal end missing and bulb removed, extensive retouch along right edge. L 28mm W 11mm.
5. Blade segment, grey/fawn flint, broken to form trapeze-shaped piece with retouch along left edge. L 41mm W 25mm.

Miscellaneous retouched and utilised pieces

1. Tranchet blade segment, grey/fawn flint.
2. Tranchet blade segment, grey/fawn flint.
3. Tranchet flake, grey/fawn flint, utilisation marks and possible signs of hafting.
4. Blade segment, grey/fawn flint, bulbar end broken away, distal end obliquely retouched, both edges retouched. L 27mm W 25mm. Fig. A3.13, 8.
5. Blade segment, grey/fawn flint, broken transversely at both ends, retouched along both edges. L 21mm W 19mm.
6. Blade, red/brown flint, bulbar end, distal end removed with transverse retouch, retouched along both edges. L 32mm W 17mm.
7. Blade, grey flint, bulb present with utilisation marks along right edge. L 45mm W 17mm. Fig. A3.13, 5.
8. Blade, grey flint with some hard grey cortex, bulb removed, fine retouch along right edge. L 48mm W 15mm.
9. Blade, fawn/grey flint, bulb present, distal end missing, utilisation marks along both edges. L 31mm W 11mm.
10. Blade, brown flint, bulb removed, retouched along both edges, damaged. L 37mm W 17mm.
11. Blade, grey/fawn flint, bulb present, lacking distal end, retouched along left edge, utilisation wear along right edge. L 46mm W 21mm. Fig. A3.13, 9.
12. Blade, grey/fawn flint, bulb present, distal end missing, retouch along both edges. L 38mm W 12mm. Fig. A3.13, 10.
13. Blade, grey/fawn flint, bulbar end, bulb missing, distal end broken away, retouch along left edge, utilisation wear along right edge. L 28mm W 15mm.
14. Blade, brown flint, bulb present, retouch along left edge. L 22mm W 11mm. Fig. A3.13, 7.
15. Blade, grey/brown flint with hard brown cortex, bulb removed and distal end missing, retouched along right edge and lower left edge. L 40mm W 17mm. Fig. A3.13, 12.
16. Blade, cream patinated flint, bulb removed, distal end missing, utilisation wear along left edge. L 20mm W 16mm
17. Blade, grey/fawn flint, distal end, utilisation wear along both edges and distal end. L 20mm W 20mm.
18. Blade, grey/fawn flint, utilisation wear along both edges. L 21mm W 14mm.
19. Blade, fawn/cream patinated flint, bulbar end with bulb present, utilisation wear along left edge. L 28mm W 15mm.
20. Flake, grey/brown flint with some hard white cortex, hinge-fractured with distal end present, retouch along both edges. L 33mm W 36mm. Fig. A3.13, 11.
21. Flake, grey/fawn flint, bulbar end lacking distal end, fine retouch along both edges. L 32mm W 32mm.
22. Flake, grey/fawn flint, distal end missing, retouched along left edge. L 40mm W 20mm.
23. Flake, grey/fawn flint, irregular with retouch on all edges. L 23mm W 22mm.
24. Flake, grey/fawn flint, possible notch at bulbar end, limited retouch on parts of other edges. L 26mm W 22mm.
25. Flake, fawn/cream patinated flint, bulb present, utilisation wear along both edges and distal end. L 22mm W 17mm.
26. Flake, fawn flint, damaged, retouched along right edge. L 28mm W 18mm.
27. Flake, grey/fawn flint, fine retouch along left edge and distal end to form a rounded point. L 36mm W 33mm.
28. Flake, grey/fawn flint, bulb present, rough retouch on distal end. L 25mm W 40mm.
29. Flake, grey/fawn flint, bulb present, hinge-fractured distal end, utilisation wear along both edges. L 33mm W 21mm.
30. Possible hollow-based scraper, grey/fawn flint, bulb removed, retouch along right edge. L 46mm W 24mm.

Debitage

Length/breadth analysis of complete debitage flakes indicates 24.2% of flakes attain blade-like proportions and 63.7% of flakes are classified as medium-proportion with an L/B ration of between 1.1 and 2.0 (Saville 1980, Young 1984, 149).

Debitage Type	*Quantity*	*% of Total*
Flakes unbroken	33	29.0
Flakes broken	30	26.3
Irregular chips & lumps	51	44.7
TOTAL	114	

Location

Dorman Museum, Middlesbrough.
Accession Numbers: A 1976/73; A 1976/75; A 1976/77; A 1976/79; A 1976/80; M 18/1987 to M 29/1987.

A3.4 Lithics analysis methodology

Lithics were provided washed and packaged in ziplock bags by Test Pit, spit and/or context specific context. Each lithic was examined on a clean working surface in natural light, then more closely by naked eye, and finally using a x10 and x20 magnification hand lens. Microscopic examination (x100 and x200 capability) was not carried out at this initial stage although a small proportion of the modified lithics displayed possible use-wear edge-damage which was noted. Metrical data (length, breadth and thickness) were captured for complete, knapped artefacts and debitage using digital callipers with plastic tines, accurate to one-hundredth of a millimetre although only recorded to a tenth.

Each lithic was logged into the spreadsheet as it was examined and allocated a unique catalogue number, prefixed: F=Flint; S=Stone (non-flint); and M=Metal. The archive spreadsheet captures a suite of metrical and lithic attribute data together with tentative interpretations of function and, where diagnostic characteristics are present, approximate period.

The following is a summary of definitions, followed by a more detailed listing (also included in the Catalogue spreadsheet in **PDF** ↳[18] and **Excel Spreadsheet** ↳[19]formats):

RAW MATERIAL	
Material	Lithic taxonomy: FLINT, CHERT, CHALCEDONY, QUARTZITE, IGNEOUS, METAPMORHIC, others as appropriate.
Material Type	Lithic raw material type based on macroscopic geological attributes.
Material Colour	Munsell (2000) soil colour charts that describe hue, value and chroma and adopted here to describe groundmass and inclusions.
Material Lustre	Dull, Medium, Shiny.
Material Texture	Fine, Medium, Coarse, Cherty.
Material Opacity	Transparent, Translucent, Semi-Translucent, Opaque when held to natural light.
Cortex	Proportion of retained cortex as %, cortex colour and type (Andrefsky Jr 2005).
Patination	Proportion and degree of patination as %, patina colour.
TECHNOLOGY	
Category	Debitage, Formal Tool, Utilised (Non-formal Tool).
Primary Type	Morphology of the blank.
Secondary Type	Morphology of a modified artefact (e.g. tool typology) or debitage. Useful reference classifications are available, inter alia, in Wickham Jones (1990, 57-63) and Butler (2005) along with chronological indicators.
Regular/Irregular	Displays or does not display a straight edge >10mm.
Reduction Sequence	Primary (fully corticated dorsal), Secondary (partially corticated), Tertiary (no cortex), *cf* Andrefsky Jr (2005).
Platform	Where present, describes the platform: Cortical; Complex (Abraded); Facetted (core/tablet); Flat; Keeled (ridge).
Bulb	Recorded as Diffuse or Pronounced where present.
Fracture Type	Describes the termination as: Corticated; Feather; Follow-on; Hinged; Irregular (shatter); Opposed platform; Overshot (plunging); Step.
Dorsal Scars	Count of visible blade/let and/or flake scars on the dorsal surface.
Metrical Data	Length, breadth, thickness to a tenth of a mm, according to Inizan et al. (1999) and Andrefsky Jr (2005), and weight to a tenth of a gram (cores).
Modification	Location and nature of anthropogenic modification (notching, retouch and truncation) on an angle-graded scale: Obtuse; Abrupt; Semi-abrupt; Acute; Semi-acute.
DAMAGE	
Burnt	Extent of thermal impact as 0 (unburnt); 1-Low (heat-crazing and discolouration); 2-Medium (completely calcined but retains form); 3-High (shattered and without indication of original form).
Complete/Fragment	Based on the present state of the artefact.
Damage	Pre- and post-depositional damage such as abrasion, snaps/breaks (with shape), impact, thermal, edge wear.

INTERPRETATION	
Interpretation	Summary of morphology, typology and function.
Period	Where diagnostic, an estimate for the chronological period to which the artefact may belong.
Notes	Additional descriptive notes and observations.

Lithic definitions: detail

1 | Raw Material

Material
- Flint (FL)
- Chalcedony (CY)
- Chert (CH)
- Stone (ST)

Material Colour (Munsell 2000)
- Brown
- Cream
- Red Brown
- White (unburnt)
- Calcined (burnt)
- Orange
- Grey

Hue
- Light (Lt)
- Mid
- Dark (Dk)

Matrix
- Speckled
- Mottled
- Plain
- Inclusions

Material Lustre
- Dull
- Glassy
- Medium
- Shiny

Material Texture
- Fine
- Medium
- Coarse
- Cherty

Material Opacity
- Transparent
- Translucent
- Semi-Translucent
- Opaque
- Indeterminate

Cortex %
- 0-100

Cortex Colour
- Brown
- Cream
- Grey
- White
- Reduced (self-coloured)
- Stained (with colour)

Cortex Type
- Hard chalk
- Soft chalk
- Reduced (self-coloured)
- Denuded (chalk)
- Battered/Rolled
- Smooth/Coarse

Patina %
- 0-100

Patina Colour
- Brown
- Grey
- Pink
- White

2 | Technology

Tool | Utitlised | Debitage
- Abbrev: T; U; D

Primary Type
- Blades (L >2xW | W >10mm)
- Blade
- Blade Fragment
- Blade Frag Distal
- Blade Frag Medial
- Blade Frag Proximal
- Blade Frag Dist+Med
- Blade Frag Prox+Med

Formal Tools

AXES / ADZES
- Axe, Adze, Chopper, Pick | Tranchet / Non-Tranchet

BORERS
- Awl | Bifacially opposed edge retouch
- Piercer | Unifacial edge retouch to a point
- Mèche de foret

NOTCHED & DENTICULATED
- Denticulate | Micro / Macro

Bladelet width <=9mm
Blade <15
Blade <20
Blade <25
Blade <30
Blade <35
Blade <40
Blade <45
Blade <50
Blade >50

Bladelet Segments (W <=9mm)
Bladelet Seg Distal
Bladelet Seg Mesial
Bladelet Seg Proximal
Bladelet Dist+Med / Prox+Mes

Flakes (L <2xW)
Flake
Flake Fragment
Flake Seg Proximal
Flake <15
Flake <20
Flake <25
Flake <30
Flake <35
Flake <40
Flake <45
Flake <50
Flake >50

Microlith Typology Reference
M-Type | Microlith Type
BROAD BLADE W >9mm
Obliquely truncated microliths
Obliquely truncated microliths LE
Isosceles triangle micoliths
Scalene triangle microliths
Bi-truncated microliths
Convex backed microlith
Broad blade microlith fragments

NARROW BLADE <=9mm
Narrow straight backed microliths
Narrow convex backed microliths
Rod microliths
Microscalene triangle microliths
Quadrangular microliths
Other narrow blade microliths
Narrow Blade fragment

M-Type | Microlith Type: W Yorks (C. Conneller March Hill Lithic Report WYMP)
1a. Scalene triangle with 2 sides retouched
1b. Scalene triangle with 2 sides retouched and retouch on leading edge

Notched | Retouched / Clactonian
Fabricator

BURINS
Burin | Truncation (single/double/alternate angle), Dihedral, Break
Combination | Multiple functions (e.g. Awl-Burin-Piercer-Scraper)

MICROLITHS (See table, below)
Microlith Rod | 2-3-4 sides retouched
Microlith Scalene | 2 or 3 sides retouched
Microlith SBB 1F 0P | Single-straight-backed bladelet 1 side fully retouched, 1 side (leading edge) partially retouched
Microlith SBB 1F 1P | Single-straight-backed bladelet both sides retouched
Microtranchet | Symmetrical/asymmetrical
Microlith Other
Microlith Indeterminate
Microlith Unfinished

PROJECTILES (Refer to Green 1980; 1984; Butler 2005)
Barbed & Tanged
Leaf shaped
Transverse
Other / Indeterminate

SCRAPERS
Scraper End | Double end
Scraper Side | Double side
Scraper Side and End
Truncation
Combination scrapers

Debitage
Axe trimming flake
Tranchet Axe re-sharpening flake
Burin Spall
Core (See Core Types, below)
Core Fragment
Core Trim Blade
Core Trim Flake
Core Trim Long | Flanc de nucléus
Core Trim Micro
Core Trim Tablet (platform/basal)
Microburin Notch
Microburin Snap
Microburin Fragment
Microburin Mis-hit
Microburin Krukowski
Debitage
Debitage Fragment
Debitage <10
Debitage <15
Debitage <20
Debitage <25
Debitage <30
Debitage <35
Debitage <40

1c. Scalene triangle with all 3 sides retouched
2. Isosceles triangle
3a. Lunate, arc blunted
3b. Lunate, cord blunted
4a. Straight-backed bladelet, retouched down one edge, partial opposing edge (SBB)
4b. Rod, retouched entirely down both edges (SBB or true Rod)
5. Convex based

Corresponding Jacobi types are included (C. Butler *Prehistoric Flintwork*, 2005 pp. 94-96).

Secondary Type
- Bladelet Seg Proximal
- Bladelet Seg Medial
- Bladelet Seg Distal
- Chips & Spalls
- Chunk (angular shatter) >10mm
- Core Prep | Crested
- Core Scraper
- Core Trim (type)
- Denticulate
- Hammerstone
- Lanceolate/Ovate
- Leaf-shaped
- Microburin
- Notched (Retouch)
- Spall

Regular / Irregular
- Reg = at least one straight edge >10mm
- Irreg= no straight edge >10mm

Reduction Sequence
- Primary = complete dorsal cortex
- Secondary = partial dorsal cortex
- Tertiary = no dorsal cortex

Platform
- 0 = None/missing
- Complex
- Cortical
- Facetted (core tablet)
- Flat
- Keeled (ridge)

Bulb
- 0
- Diffuse
- Pronounced

Fracture Type
- 0 = None
- Feather
- Debitage <45
- Debitage <50
- Debitage >50
- Pebble

Core Types
- C-Type | Core Type: W Yorks (C. Conneller March Hill Lithic Report WYMP Unpub.)
- A1. Single platform, flakes removed all way around
- A2. Single platform, flakes removed part way around
- B1. Two parallel platforms
- B2. Two platforms, one at an oblique angle
- B3. Two platforms at right angles
- C. Three or more platforms
- D. Flakes struck from either side of a ridge
- E. As D but with two platforms or more (keeled)

Metrical Data
- Length (mm)
- Width (mm)
- Thickness (mm)
- Weight (0.1g)
- Angles (platform, scraper) in *Notes*

Interpretation
- Backed Blade
- Core F1 (P. Rowe)
- Core B1
- Core B2O
- Core B2R
- Core B3OR
- Fragment
- Lanceolate
- Mis-hit
- Microbruin Notch
- Microburin Snap
- Notched
- Retouched
- Rod
- Scalene
- Scalene Unfinished
- Tranchet
- Trapeze
- Truncation Oblique
- Truncation Straight
- Utilised

Modification
- 0 = None
- Abrupt
- Semi-Abrupt
- L Edge
- R Edge
- Distal End
- Proximal End
- Dorsal Retouch

- Hinged
- Irregular
- Opposed Platform (bi-polar)
- Overshot
- Shatter
- Step

Dorsal Scars
- 0, 1, 2, 3+

Core Discard

South Hebrides Mesolithic Project
(S. Mithen & B. Finlayson)
- Discard=Angle
- Discard=Flawed
- Discard=Overshot
- Discard=Size
- Discard=Step/Hinge
- Discard=Combination

- Ventral Retouch
- Bifacial Retouch
- L Edge Notch
- R Edge Notch

Bulb Orientation: L or R edges
- Microliths & Microburins: bulb or proximal end at top
- All Others: bulb or proximal end at bottom

3 | Damage

Burnt
- 0
- 1 Low | thermal cracks/spalls, retains form
- 2 Med | partly calcined, retains form
- 3 High | fully calcined, no form

Complete / Fragment
- Complete
- Fragment
- Rejoin
- Refit

Damage
- 0 = None
- Battered
- Edge wear
- Impact
- Modern
- Segment
- Snapped
- Snapped mis-hit
- Thermal
- Abraded

Snap Type | D=Distal P=Proximal
- 0 = None
- Angled
- Curvilinear (S)
- Dihedral (burin)
- Irregular
- Stepped
- Straight
- Straight Angled
- Thermal

4 | Interpretation

Period
- Indeterminate
- Epi-Pal
- Meso
- Meso-Early
- Meso-Late
- Neo
- Neo-Early
- Neo-Late
- EBA, BA
- Neo-BA

Groups / Re-joins / Refits

Notes (Artefacts)
- Missing portion
- Notch location
- Patination
- Platforms
- Retouch location
- Dihedral snap (cf. burin/microburin or impact)
- Oblique snap
- Straight snap (90° to lateral edge)
- Use wear

Illustration | Photo JPEG/TIFF | Drawing

A3.5.1 Lithics catalogue 2017 | Table 1 of 6

Site Information					Raw Material		Technology					Date	Pic	Notes
Site Code	Area / Test Pit	Context / Spit	Lithic Catalogue ID No.	Notes (Site / Context)	Material Type	Material Colour	Tool / Utilised / Debitage	Primary Type (Blank) Numbers are L in mm	Secondary Type (Modified)	Reduction 1=Primary | 2=Secondary | 3=Tertiary	Burnt	Period	Illustration	Metrics only for complete debitage & tools
EHP17	A2	(2)	**F001**		Flint - Semi-translucent	Mid-brown	Debitage	Debitage <10		Secondary	No	Prehistoric		
EHP17	A3	–	**S002**	Hearth	Mineralised Material		Debitage	Debitage <10		–	Yes	–		Possibly bone or pot.
EHP17	A3	–	**S003**	Hearth	Mineralised Material		Debitage	Debitage <10		–	Yes	–		Possibly bone or pot.
EHP17	A3	–	**S004**	Hearth	Mineralised Material		Debitage	Debitage <10		–	Yes	–		Possibly bone or pot.
EHP17	A3	–	**F005**	Hearth	Flint		Debitage	Debitage <10		–	Yes	Prehistoric		
EHP17	A3	–	**F006**	Hearth	Flint		Debitage	Debitage <10		–	Yes	Prehistoric		
EHP17	A3	–	**F007**	Hearth	Flint		Debitage	Debitage <10		–	Yes	Prehistoric		
EHP17	A3	–	**F008**	Hearth	Flint		Debitage	Debitage <10		–	Yes	Prehistoric		
EHP17	A3	–	**F009**	Hearth	Flint		Debitage	Debitage <10		–	Yes	Prehistoric		
EHP17	A3	–	**F010**	Hearth	Flint - Translucent		Debitage	Debitage <10		Tertiary	No	Prehistoric		
EHP17	A3	–	**F011**	Hearth	Flint - Semi-translucent		Debitage	Debitage <10		Tertiary	No	Prehistoric		
EHP17	A3	(6)	**F012**	Hearth	Flint - Translucent	Light brown	Tool	Blade <50 Crested	Scraper - side and end	Tertiary	No	Neolithic	**Fig. A1**	Semi-invasive edge retouch on crested (side) blade.
EHP17	A3	(6)	**F013**	Hearth	Flint - Semi-translucent		Debitage	Flake <40		Primary	Yes	Prehistoric		Refit.
EHP17	A3	(6)	**F014**	Hearth	Flint - Semi-translucent		Debitage	Flake <40		Primary	Yes	Prehistoric		Refit.
EHP17	A3	(6)	**F015**	Hearth	Flint - Semi-translucent		Debitage	Flake <10		Primary	Yes	Prehistoric		Refit.
EHP17	A3	(6)	**F016**	Hearth	Flint - Opaque	Grey	Debitage	Flake <30		Secondary	No	Prehistoric		
EHP17	A3	(6)	**F017**	Hearth	Flint		Debitage	Debitage <10		Tertiary	Yes	Prehistoric		
EHP17	A3	(6)	**F018**	Hearth	Flint		Debitage	Debitage <10		Tertiary	Yes	Prehistoric		
EHP17	A3	(6)	**F019**	Hearth	Flint		Debitage	Debitage <10		Tertiary	Yes	Prehistoric		
EHP17	A3	(6)	**F020**	Hearth	Flint		Debitage	Debitage <10		Tertiary	Yes	Prehistoric		
EHP17	A3	(6)	**F021**	Hearth	Flint		Debitage	Debitage <10		Tertiary	Yes	Prehistoric		
EHP17	A4	(1)	**F022**		Flint - Semi-translucent	Grey-brown speckled	Debitage	Core - Flake	Multi-platform	Secondary	No	Early Neolithic	**Fig. A1**	Multiple platforms, some step-fractures, some platform-edge preparation.
EHP17	A4	(1)	**F023**		Flint - Semi-translucent	Grey-brown speckled	Tool?	Flake fragment	Scraper or awl/combination?	Tertiary	No	Prehistoric		Retouch is more likely than platform-edge remnant scars.
EHP17	A4	(1)	**F024**		Flint - Opaque cherty	Mid brown laminar	Debitage	Angular fragment		Secondary	No	Prehistoric		Laminar surfaces (possible core rejuvenation basal tablet) are more like chert than drift flint.
EHP17	A4	(2)	**S025**		Cannel coal / oil-shale	Black	Artefact	Vessel or bracelet / arm-band	See Notes	–	No	Prehistoric	**Fig. A6**	Rim or edge fragment of cannel coal or oil-shale with polished/burnished outer convex surface and vertical slightly irregular linear tool marks on inner concave surface. Form suggests a vessel rather than a bracelet or arm-band fragment but equivocal. Diameter 90.0mm, thickness on finished edge 5.3mm, lower break 6.3mm. Tool marks are consistent with a fine flint blade or flake. A circular 'void' on both the inner and outer surfaces may be an intentional piercing for suspension or repair. The inner circle has, at 20xmag evidence for being drilled or countersunk. The 'fill' is indeterminate mid-brown pending analysis. Cleaned with soft hair-brush and distilled water. Requires specialist analysis (Alison Sheridan and Fraser Hunter, National Museum of Scotland).
EHP17	A4	(2)	**F026**		Flint - Semi-translucent	Dark brown speckled, hard chalky cortex	Tool	Irregular flake <70	Awl or combination tool	–	No	Late Bronze Age	**Fig. A1**	Irregular, large flake with majority of nodule-cortex remaining. Some edge damage may be through utilisation. Two shallow notches on one side flank form a chisel-like pointed facet (e.g. graver).
EHP17	A4	(2)	**F027**		Flint - Semi-translucent	Mid-brown speckled	Debitage	Flake <20	Platform edge with angle >90°	–	No	Prehistoric		Remnant of platform edge with attempted flake removes but at an inoperable angle.

A3.5.2 Lithics catalogue 2017 | Table 2 of 6

Site Information					Raw Material		Technology					Date	Pic	Notes
Site Code	Area / Test Pit	Context / Spit	Lithic Catalogue ID No.	Notes (Site / Context)	Material Type	Material Colour	Tool / Utilised / Debitage	Primary Type (Blank) Numbers are L in mm	Secondary Type (Modified)	Reduction 1=Primary | 2=Secondary | 3=Tertiary	Burnt	Period	Illustration	Metrics only for complete debitage & tools
EHP17	A4	(2)	**F028**		Flint - Opaque	White	Debitage	Flake <15	Blade-like flake	Tertiary	No	Prehistoric		Dorsal scars suggest previous blade removals.
EHP17	A4	(2)	**F029**		Flint		Debitage	Blade fragment		Tertiary	Yes	Prehistoric		
EHP17	A4	(2)	**F030**		Flint		Debitage	Debitage <15		Tertiary	Yes	Prehistoric		
EHP17	A4	(2)	**F031**		Flint		Debitage	Debitage <15		Tertiary	Yes	Prehistoric		
EHP17	A5	(1)	**F032**		Flint - Semi-translucent	Red-brown speckled	Tool	Flake <50	Scraper - side	Secondary	No	Neolithic - Bronze Age	**Fig. A1**	Broad platform remnant with edge-retouch on right side.
EHP17	A5	(1)	**F033**		Flint - Translucent	Mid-brown	Debitage	Flake <15		Tertiary	No	Prehistoric		
EHP17	A5	(1)	**F034**		Flint - Semi-translucent	Mid-brown speckled	Debitage	Flake <15		Tertiary	No	Prehistoric		
EHP17	A5	(1)	**F035**		Flint - Translucent	Mid-brown	Debitage	Debitage <10		Tertiary	No	Prehistoric		
EHP17	A5	(1)	**F036**		Flint - Translucent	Mid-brown	Debitage	Debitage <10		Tertiary	No	Prehistoric		
EHP17	A5	(2)	**S037**		Chert - Banded	Dark brown	Debitage	Angular fragment	Tested pebble	Secondary	No	Prehistoric		Banded chert but with flint-like characteristics.
EHP17	A5	(3)	**F038**		Flint		Debitage	Debitage <10		Tertiary	Yes	Prehistoric		
EHP17	B	Surface	**F039**		Flint - Translucent	Light brown	Debitage	Bladelet <30		Tertiary	No	Late Mesolithic		
EHP17	B	Surface	**F040**		Flint		Debitage	Bladelet fragment		Tertiary	Yes	Late Mesolithic		Distal end and tip as two conjoining fragments.
EHP17	B1	Spit 2	**F041**		Flint - Translucent	Light brown	Debitage	Flake <15		Tertiary	No	Prehistoric		Bag contains large charcoal fragment.
EHP17	B4	(3)	**F042**		Flint - Translucent	Mid-grey brown	Debitage	Blade <50	Overshot	Secondary	No	Mesolithic		Prepared platform edge, possible crushing at distal end.
EHP17	B4	(3)	**F043**		Flint - Translucent	Mid-brown	Utilised	Blade <35	Use-wear gloss	Secondary	No	Late Mesolithic		Fine edge damage along entire left edge likely through use. No retouch. Termination is a hinge-fracture.
EHP17	B4	(3)	**F044**		Flint - Translucent	Light brown	Debitage	Flake fragment		Secondary	No	Mesolithic - Neolithic		
EHP17	B4	(3)	**F045**		Flint - Opaque	White	Debitage	Blade <20		Tertiary	No	Prehistoric		
EHP17	B8	(2)	**F046**		Flint		Debitage	Angular fragment		Secondary	Yes	Prehistoric		
EHP17	B9	(2)	**F047**		Flint		Debitage	Angular fragment		Secondary	Yes	Prehistoric		
EHP17	B10	(2)	**F048**		Flint		Debitage	Angular fragment		Tertiary	Yes	Prehistoric		
EHP17	B10	(2)	**F049**		Flint		Debitage	Angular fragment		Tertiary	Yes	Prehistoric		
EHP17	B11	(3)	**F050**		Flint	Mid-yellow brown	Tool	Flake <20	Scraper - end / thumbnail	Primary	No	Late Mesolithic or Early Bronze Age		Small, ovate scraper on a 'pot-lid' type flake. 20mm has semi-invasive parallel retouch.
EHP17	B11	(3)	**S051**		Chert?	Black shiny	Debitage	Bladelet fragment?		Tertiary	No	Prehistoric / Natural		Possibly natural but also could be a microburin.
EHP17	B13	(2)	**S052**		Chalcedony-Agate	Red-purple	Natural	Laminar		–	No	Natural		Frost-pitted. No modification but not implausible that it was a curated curiosity.
EHP17	B13	(2)	**F053**		Flint - Translucent	Yellow brown	Debitage	Debitage <10		Tertiary	No	Prehistoric		Small spall.
EHP17	B13	(2)	**F054**		Flint - Semi-translucent	Cream	Debitage	Debitage <10		Tertiary	No	Prehistoric		Small spall.
EHP17	B16	(2)	**F055**		Flint - Semi-translucent	Mid-grey brown	Tool	Blade fragment	Retouched blade	Secondary	Yes	Late Neolithic - Early Bronze Age	**Fig. A2**	Mesial surviving segment of a broad blade, 20.7mm width, 8.4mm thickness. The right edge displays semi-invasive retouch while the opposing edge is hard non-chalky cortex.
EHP17	B16	(2)	**S056**		Chert	Grey-brown non-shiny	Debitage	Angular fragment		Secondary	No	Prehistoric		
EHP17	B17	(2)	**S057**		Chert	Black non-shiny	Debitage	Angular fragment		Tertiary	No	Prehistoric?		
EHP17	B17	(2)	**S058**		Natural		Natural					Natural		
EHP17	B18	(2)	**S059**		Flint		Natural					Natural		
EHP17	B18	(2)	**S060**		Sandstone		Natural	Pebble fragment				Natural		
EHP17	B19	(1)	**F061**		Flint - Semi-translucent	Light cream-brown	Tool	Bladelet	Microlith - straight backed bladelet	Tertiary	No	Late Mesolithic	**Fig. A2**	Narrow blade microlith, 7.8mm width, missing the distal end. Oblique edge-retouch, normally more characteristic of Early Mesolithic technology, has removed the proximal end and presumably the microburin notch.

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Site Information					Raw Material		Technology					Date	Pic	Notes
Site Code	Area / Test Pit	Context / Spit	Lithic Catalogue ID No.	Notes (Site / Context)	Material Type	Material Colour	Tool / Utilised / Debitage	Primary Type (Blank) Numbers are L in mm	Secondary Type (Modified)	Reduction 1=Primary | 2=Secondary | 3=Tertiary	Burnt	Period	Illustration	Metrics only for complete debitage & tools
EHP17	B19	(1)	**F062**		Flint - Semi-translucent	Light grey-brown speckled	Debitage	Core - Blade	Two-platform bi-polar	Secondary	No	Late Mesolithic - Early Neolithic	**Fig. A2**	Small core with blade removals from two opposing platforms. Some platform preparation (grinding) is present. The flint is relatively flawed with two hinge fracture scars present. The core retains some hard white chalky cortex on around 1/3 of its surface.
EHP17	B19	(1)	**F063**		Flint - Opaque	Light grey	Tool	Flake <50	Combination tool	Secondary	No	Early Neolithic	**Fig. A2**	Blade-like flake (dorsal scars), L 46.7mm, W 23.9mm, T 4.4mm with a relatively broad platform remnant. The straight left edge displays use-wear damage and a awl-piercer-type point at the distal end. The right edge is corticated and worn.
EHP17	B19	(1)	**F064**		Flint - Semi-translucent	Light grey-brown speckled	Utilised	Flake <30	Scraper - side?	Tertiary	No	Late Neolithic - Bronze Age		Robust hinge-fractured flake with a small area of edge damage suggesting it may have operated as an expedient scraper.
EHP17	B19	(1)	**F065**		Flint - Semi-translucent	Mid-grey brown speckled	Debitage	Flake fragment		Secondary	Yes	Prehistoric		
EHP17	B19	(1)	**F066**		Flint - Semi-opaque	Light cream-brown	Debitage	Flake fragment		Tertiary	No	Prehistoric		
EHP17	B19	(1)	**F067**		Flint - Opaque	White	Debitage	Bladelet fragment		Tertiary	No	Mesolithic		Proximal end only.
EHP17	B19	(1)	**F068**		Flint		Debitage	Debitage <10		-	Yes	Prehistoric		
EHP17	B19	(1)	**F069**		Flint		Natural			-	No	Natural		
EHP17	B19	(1)	**M070**		Metal		Other			-	-	Modern		
EHP17	B20	Spit 2	**F071**		Flint - Semi-translucent	Light brown	Debitage	Flake fragment		Secondary	No	Prehistoric		
EHP17	B21	(1)	**S072**		Chert	Dark brown shiny	Debitage	Blade fragment?		Secondary	No	Prehistoric		Likely dorsal removal scars.
EHP17	B21	(2)	**S073**		Natural		Natural					Natural		
EHP17	B22	(1)	**F074**		Flint - Semi-translucent	Dark brown speckled, hard chalky cortex	Utilised?	Core fragment	Possibly utilised awl?	Secondary	No	Prehistoric	**Fig. A2**	The broad platform edge has been heavily ground. A on the left side, and some edge damage, may indicate expedient utilisation as a non-formal tool.
EHP17	C	Surface	**F075**		Flint - Semi-translucent	Mid-brown speckled	Debitage	Flake fragment		Tertiary	No	Prehistoric		
EHP17	C	Surface	**F076**		Flint - Semi-translucent	Mid-brown speckled	Debitage	Flake <15		Tertiary	No	Prehistoric		
EHP17	C	Surface	**F077**		Flint		Debitage	Angular fragment		Tertiary	Yes	Prehistoric		
EHP17	C1	(2)	**F078**		Flint		Debitage	Flake <20		Tertiary	Yes	Prehistoric		
EHP17	C1	(2)	**F079**		Flint - Semi-translucent	Light brown	Debitage	Flake <50		Tertiary	No	Prehistoric		Small spall.
EHP17	C1	(2)	**S080**		Natural		Natural			-	-	Natural		
EHP17	C1	-	**S081**		Chert	White	Debitage	Flake <20		Tertiary	No	Prehistoric		
EHP17	C1	(3)	**F082**		Flint - Semi-translucent	Mid-brown speckled	Debitage	Blade fragment		Tertiary	No	Prehistoric		
EHP17	C1	(3)	**F083**		Flint - Semi-translucent	Light brown speckled	Debitage	Flake <15		Tertiary	No	Prehistoric		
EHP17	C2	(1)	**S084**		Chalcedony	Red translucent	Fragment			Primary	No	Uncertain		Blade-like fragment <14mm long with two or more notional scars that wouldn't be out of place on a platform edge or artefact. Equivocal.
EHP17	C2	(1)	**F085**		Flint - Semi-translucent	Light brown	Debitage	Debitage <5		Tertiary	No	Prehistoric		
EHP17	C2	(1)	**F086**		Flint		Debitage	Bladelet fragment		Tertiary	Yes	Prehistoric		Distal end.
EHP17	C2	(1)	**F087**		Flint		Natural			-	No	Natural		Small chip.
EHP17	D1	(1)	**F088**		Flint		Natural			-	No	Natural		
EHP17	D1	(3)	**F089**		Flint - Translucent	Mid-brown	Debitage	Debitage <5		Tertiary	No	Prehistoric		Small chip.
EHP17	D2	Spits 1-2	**F090**		Flint		Natural			-	No	Natural		
EHP17	D2	Spits 1-2	**S091**		Natural		Natural			-	No	Natural		
EHP17	D2	-	**S092**	Clay layer	Natural		Natural			-	No	Natural		
EHP17	D2	-	**S093**	Clay layer	Natural		Natural			-	No	Natural		
EHP17	D2	-	**S094**	Clay layer	Natural		Natural			-	No	Natural		
EHP17	D2	-	**S095**	Clay layer	Natural - shale		Natural			-	No	Natural		

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Site Information					Raw Material		Technology					Date	Pic	Notes
Site Code	Area / Test Pit	Context / Spit	Lithic Catalogue ID No.	Notes (Site / Context)	Material Type	Material Colour	Tool / Utilised / Debitage	Primary Type (Blank) Numbers are L in mm	Secondary Type (Modified)	Reduction 1=Primary | 2=Secondary | 3=Tertiary	Burnt	Period	Illustration	Metrics only for complete debitage & tools
EHP17	D3	A1	**F096**		Flint		Natural			–	No	Natural		
EHP17	E1	(1)	**F098**		Flint - Semi-translucent	Mid-grey brown	Debitage	Debitage <15		–	Yes	Prehistoric		
EHP17	E1	(1)	**F099**		Flint - Translucent		Debitage	Debitage <15		–	No	Prehistoric		
EHP17	E1	(1)	**F100**		Flint - Semi-opaque		Debitage	Debitage <10		–	No	Prehistoric		
EHP17	E1	(2)	**F101**		Flint - Semi-translucent	Dark grey-brown	Tool	Flake <30	Scraper - end	Tertiary	Yes	Neolithic	**Fig. A3**	Large flake with broad platform, edge-retouched to 45° angle at distal end with some edge damage on left side.
EHP17	E1	(2)	**F102**		Flint - Semi-translucent	Dark grey-brown	Utilised?	Flake <25		Secondary	No	Prehistoric		Broad flake with broad platform remnant and possible edge use-wear damage on right side.
EHP17	E1	(2)	**F103**		Flint - Opaque		Natural			–	No	Natural		
EHP17	E1	(2)	**F104**		Flint		Debitage	Bladelet fragment		Tertiary	Yes	Prehistoric		Distal top with feathered termination.
EHP17	E1	(2)	**F105**		Flint - Translucent	Orange-brown	Debitage	Debitage <5		Secondary	No	Prehistoric		Small chip.
EHP17	E1	(3)	**F106**		Flint - Semi-translucent	Dark grey-brown speckled	Debitage	Core fragment		Secondary	No	Neolithic		
EHP17	E1	(3)	**F107**		Flint - Semi-translucent	Mid-brown speckled	Utilised?	Flake fragment		Tertiary	No	Prehistoric		Possible use-wear damage along left edge, distal end missing.
EHP17	E1	(3)	**F108**		Flint - Semi-translucent	Mid-grey-brown speckled	Debitage	Flake <20		Tertiary	No	Prehistoric		
EHP17	E1	(3)	**F109**		Flint - Semi-translucent	Mid-brown speckled	Debitage	Flake <15		Tertiary	No	Prehistoric		
EHP17	E1	(3)	**F110**		Flint - Semi-translucent	Mid-brown speckled	Debitage	Flake <10		Tertiary	No	Prehistoric		
EHP17	E1	(4)	**F111**		Flint - Semi-translucent	Dark grey	Debitage	Flake <30		Secondary	No	Prehistoric		Hard cream cortex.
EHP17	E2	(4)	**F112**		Flint - Semi-translucent	Mid-brown speckled	Debitage	Flake <20		Tertiary	No	Prehistoric		
EHP17	E2	(4)	**F113**		Flint - Semi-translucent	Mid-brown speckled	Debitage	Flake <15		Tertiary	Yes	Prehistoric		
EHP17	E2	(4)	**F114**		Flint		Debitage	Angular fragment		Tertiary	Yes	Prehistoric		
EHP17	E2	(5)	**F115**	Pit	Flint - Semi-translucent	Mid-brown speckled	Debitage	Bladelet <15		Tertiary	No	Prehistoric		Small bladelet / spall.
EHP17	E2	(5)	**S116**	Pit	Natural - quartzite		Natural			–	No	Natural		
EHP17	E2	(5)	**S117**	Pit	Natural - sandstone		Natural			–	No	Natural		
EHP17	E2	(5)	**S118**	Pit	Natural - sandstone		Natural			–	No	Natural		
EHP17	E2	(5)	**S119**	Pit	Natural - schist		Natural			–	No	Natural		Semi-circular tablet but no indications of modification.
EHP17	E3	(5)	**F120**		Flint - Opaque	Yellow-brown	Debitage	Flake <25		Secondary	No	Prehistoric		
EHP17	E4	(1)	**S121**		Clinker		Other			–	Yes	Unknown		
EHP17	E4	(3)	**F122**		Flint - Semi-translucent	Mid-brown speckled	Debitage	Blade fragment		Tertiary	No	Prehistoric		Distal end with feathered termination, consistent with Mesolithic to early Neolithic blade-based technology.
EHP17	E4	(3)	**F123**		Flint		Debitage	Debitage <10		Tertiary	Yes	Prehistoric		Small chip.
EHP17	E4	(4)	**F124**		Flint - Semi-translucent	Mid-brown speckled	Debitage	Blade fragment		Tertiary	No	Prehistoric		
EHP17	E4	(4)	**F125**		Flint - Semi-translucent	Mid-brown speckled	Debitage	Flake <15		Tertiary	No	Prehistoric		Bladelet dorsal scars, hinge termination.
EHP17	E4	(4)	**F126**		Flint - Opaque	White	Debitage	Blade fragment		Tertiary	No	Prehistoric		
EHP17	E4	(4)	**F127**		Flint - Semi-translucent	Mid-brown speckled	Debitage	Flake <10		Primary	No	Prehistoric		
EHP17	E4	(5)	**S128**		Natural - sandstone		Natural			–	No	Natural		
EHP17	E4	(5)	**S129**		Natural - sandstone		Natural			–	No	Natural		
EHP17	E4	(5)	**S130**		Natural - sandstone		Natural			–	No	Natural		
EHP17	E5	(1)	**F131**		Flint		Natural			–	No	Natural		
EHP17	E5	(2)	**F132**		Flint		Debitage	Debitage <10		Tertiary	Yes	Prehistoric		
EHP17	E5	(2)	**F133**		Flint		Debitage	Debitage <10		Tertiary	Yes	Prehistoric		
EHP17	E5	(2)	**F134**		Flint		Debitage	Debitage <10		Tertiary	Yes	Prehistoric		
EHP17	E5	(3)	**S135**		Natural - sandstone		Natural			–	Yes	Natural		
EHP17	E5	(3)	**S136**		Natural - sandstone		Natural			–	Yes	Natural		
EHP17	E5	(3)	**S137**		Natural		Natural			–	No	Natural		
EHP17	E5	(3)	**S138**		Natural		Natural			–	No	Natural		

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Site Information					Raw Material		Technology					Date	Pic	Notes
Site Code	Area / Test Pit	Context / Spit	Lithic Catalogue ID No.	Notes (Site / Context)	Material Type	Material Colour	Tool / Utilised / Debitage	Primary Type (Blank) Numbers are L in mm	Secondary Type (Modified)	Reduction 1=Primary | 2=Secondary | 3=Tertiary	Burnt	Period	Illustration	Metrics only for complete debitage & tools
EHP17	E5	(3)	**S139**		Natural		Natural			-	No	Natural		
EHP17	E5	(3)	**S140**		Natural		Natural			-	No	Natural		
EHP17	E5	(3)	**S141**		Natural		Natural			-	No	Natural		
EHP17	E5	(3)	**S142**		Natural		Natural			-	No	Natural		
EHP17	E5	(3)	**F143**		Flint - Semi-translucent	Mid-brown speckled	Utilised?	Flake fragment		Tertiary	No	Prehistoric		Possible use-wear damage along left side, or micro-denticulation (serration).
EHP17	E5	(3)	**F144**		Flint - Semi-translucent	Mid-brown speckled	Debitage	Debitage <10		Tertiary	No	Prehistoric		
EHP17	E5	(4)	**F145**		Flint - Semi-translucent	Dark brown speckled, hard chalky cortex	Debitage	Blade fragment		Secondary	No	Prehistoric		Distal end.
EHP17	E5	(4)	**F146**		Flint - Translucent	Red-brown	Debitage	Flake fragment		Tertiary	No	Prehistoric		
EHP17	E5	(4)	**F147**		Flint		Debitage	Flake <20		Secondary	Yes	Prehistoric		
EHP17	E5	(4)	**F148**		Flint		Debitage	Debitage <15		Tertiary	Yes	Prehistoric		
EHP17	E5	(4)	**F149**		Flint		Debitage	Debitage <10		Tertiary	Yes	Prehistoric		
EHP17	E6	(2)	**F150**		Flint - Semi-translucent	Mid-brown speckled	Debitage	Flake <15		Tertiary	No	Prehistoric		
EHP17	E6	(3)	**F151**		Flint		Debitage	Debitage <5		Tertiary	Yes	Prehistoric		Small spall.
EHP17	E8	(2)	**F152**		Flint		Debitage	Bladelet fragment		Tertiary	Yes	Late Mesolithic - Early Neolithic		Mesial segment.
EHP17	E8	(2)	**F153**		Flint - Semi-translucent	Mid-brown speckled	Debitage	Angular fragment		Tertiary	No	Prehistoric		
EHP17	E8	(3)	**F154**	Surface	Flint - Semi-translucent	Mid-brown speckled	Debitage	Flake <30		Secondary	No	Prehistoric		Hard white cortex, notch is probably taphonomy / fortuitous.
EHP17	E	-	**F155**	Surface	Flint - Semi-translucent	Mid-grey-brown speckled	Utilised	Blade <40		Tertiary	No	Late Mesolithic - Early Neolithic	**Fig. A3**	Overshot blade with step-fracture removal scars on dorsal face. Left edge has marginal retouch or heavy use-wear damage and gloss.
EHP17	E	-	**F156**	Surface	Flint - Semi-translucent	Mid-brown speckled	Debitage	Debitage <20		Tertiary	No	Prehistoric		
EHP17	E	-	**F157**	Surface	Flint - Translucent	Light brown	Debitage	Debitage <10		Tertiary	No	Prehistoric		
EHP17	E	-	**F158**	Surface	Flint - Semi-translucent	Dark grey	Debitage	Angular fragment		Tertiary	Yes	Prehistoric		
EHP17	E	-	**F159**		Flint - Semi-translucent	Dark grey	Debitage	Bladelet fragment		Tertiary	Yes	Prehistoric		
EHP17	E	-	**F160**		Flint - Semi-translucent	Mid-brown speckled	Debitage	Debitage <10		Tertiary	No	Prehistoric		Small chip.
EHP17	B19	(4)	**S161**	Natural clay beneath peat horizons	Sandstone	Mid-brown	Artefact	Hammerstone or rubbing stone / pounder	Thick tapering butt	-	No	Neolithic - Bronze Age	**Fig. A7**	This unusual object is ostensibly axe-shaped (as such it would match Yorkshire Type 4 in Manby (1979, 66) if of ground stone or flint). The narrow butt end is damaged by percussion with additional suggestions of pecking at the opposing splayed end. The top and bottom surfaces show indications of chamfering on the edges leaving flattened planes as might be expected as a function of rubbing along the long axes. Max. dimensions are L 95mm, W 55mm, Thickness 23mm. While bevelled pebbles do occur on some Mesolithic sites, especially coastal, it seems more likely that this artefact is of Neolithic to Bronze Age date. Further macroscopic and microscopic analysis is anticipated. Manby does note the occasional exploitation of more unusual raw materials, in addition to the usual flint, metamorphic and igneous materials (e.g. tuff), such as sandstone, siltstone and limestone.

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Site Information					Raw Material		Technology					Date	Pic	Notes
Site Code	Area / Test Pit	Context / Spit	Lithic Catalogue ID No.	Notes (Site / Context)	Material Type	Material Colour	Tool / Utilised / Debitage	Primary Type (Blank) Numbers are L in mm	Secondary Type (Modified)	Reduction 1=Primary | 2=Secondary | 3=Tertiary	Burnt	Period	Illustration	Metrics only for complete debitage & tools
EHP17	X	-	**F162**	Surface, Pig Bank	Flint - Semi-translucent	Mid-grey-brown speckled	Tool	Flake <25	Scraper - ovate / thumbnail	Tertiary	No	Late Neolithic - Early Bronze Age	**Fig. A4**	Well-executed thumbnail scraper, retouch around entire circumference, consistent with Early Bronze Age Beaker period. L 21.1mm, W 18.7mm, T 5.2mm.
EHP17	X	-	**F163**	Surface, Pig Bank	Flint - Semi-translucent	Mid-brown speckled	Tool	Flake <30	Projectile - leaf-shaped arrowhead	Tertiary	No	Early Neolithic	**Fig. A5**	Asymmetrical ogival leaf-arrowhead rendered on a blade-like flake (dorsal scars). Minimal edge-retouch mostly on the left side creates a minimalist but effective form. This would not be out of place in a very late terminal Mesolithic assemblage. L 27.2mm, W 14.2mm, T 2.7mm.
EHP17	X	-	**F164**	Surface, Pig Bank	Flint - Semi-translucent	Mid-grey-brown speckled	Tool	Flake <30	Projectile - leaf-shaped arrowhead	Tertiary	No	Early Neolithic	**Fig. A5**	Asymmetrical ogival leaf-arrowhead rendered on a blade-like flake (dorsal scars). Minimal edge-retouch mostly on the right side creates a minimalist but effective form - edge damage would consistent with use-wear. This would not be out of place in a very late terminal Mesolithic assemblage. L 26.7mm, W 15.5mm, T 4.5mm.
EHP17	X	-	**F165**	Surface, Pig Bank	Flint - Translucent	Light brown	Utilised	Flake <30		Tertiary	No	Late Mesolithic - Early Neolithic		Blade-like flake (dorsal scars), With a feathered straight termination that displays possible use-wear (but not retouch). While conjectural, this would not be inconsistent with the forms of later Neolithic oblique arrowheads (chisel type) or Late Mesolithic symmetrical and asymmetrical micro-tranchet microliths. L 25.9mm, W 15.4mm, T 2.4mm.
EHP17	X	-	**F166**	Surface, Pig Bank	Flint - Semi-translucent	Mid-brown speckled	Tool	Blade fragment	Invasively-retouched knife or Scraper - side	Tertiary	No	Late Neolithic - Early Bronze Age	**Fig. A5**	Distal-end blade fragment with possibly two phases of semi-invasive edge-retouch on a cloudy-white patinated blade. The blade blank would not be out of place in a Mesolithic or Early Neolithic assemblage. The semi-acute-angled left-edge retouch breaks the blanks' patination but is less distinct than the right-edge and fresher-looking parallel retouch at a more acute angle. An interpretation might conclude that this is a legacy artefact that has seen two further, and time-distant, re-modifications. The present W is 18.2mm (minimum), surviving at L 28.6mm, T 5.2mm, with two dorsal blade scar removals on a substantial blade.

Appendix 4 Test Pit Recording Booklet

The 2017 season of fieldwork focussed on test-pit exploration an sampling in focus areas established by previous surface finds and promising geophysical survey results (Appendix 2, above). The project team selected a recording protocol and recording sheets, specifically the *Test Pit Recording Booklet*, developed by Prof Carenza Lewis while at Cambridge University (now at the University of Lincoln) and refined by the Leicestershire Fieldworkers group, as well as others. It is the latter's pack that was used.

Leicestershire Fieldworkers resources ↳[20]
Online access and free to use

TEST PIT
RECORDING BOOKLET

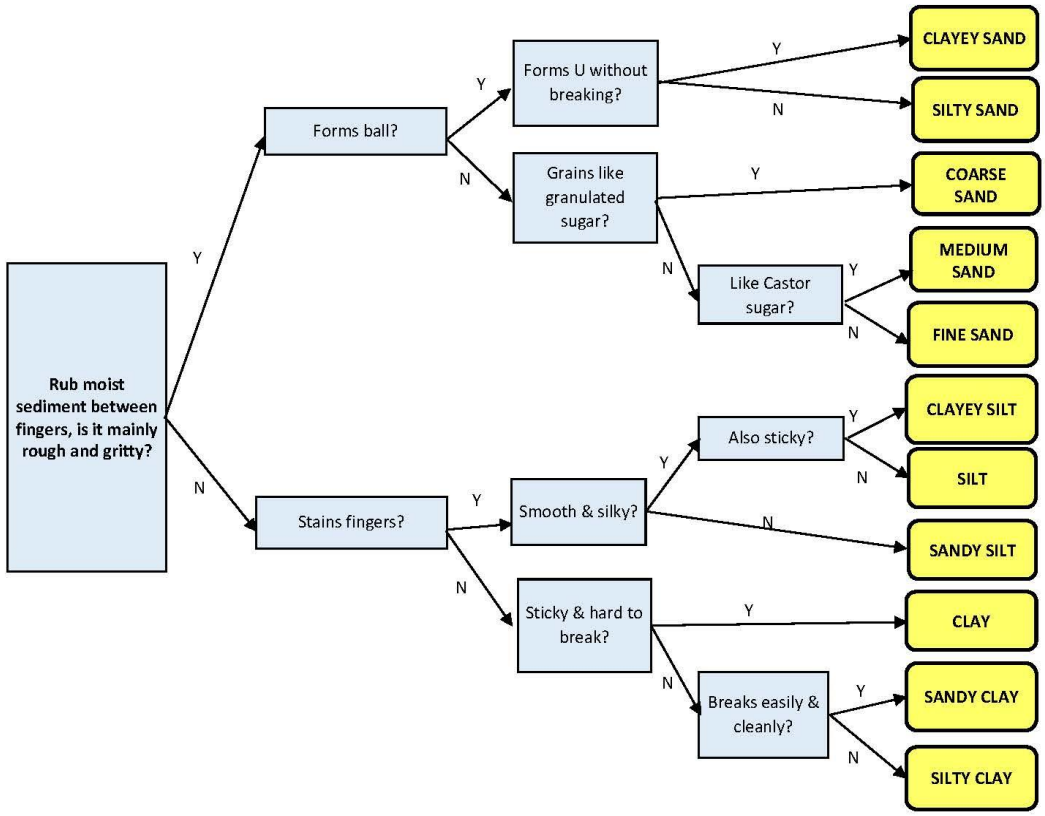
Site Code:		Test Pit number:	

Test Pit location:		Grid reference:	

Test Pit team names:	Date of excavation:	
1.	2.	
3.	4.	
5.	6.	

SOIL RECORDING GUIDES

GUIDE 1: SOIL COMPOSITION



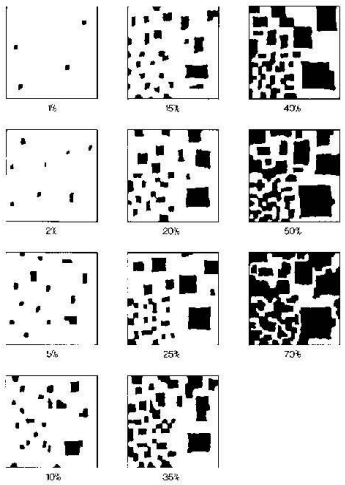
GUIDE 2: SOIL COLOUR

Use the following combination of hue, modifier and colour to best describe the spit (e.g. pale reddish orange).

Hue	Modifier	Colour
Pale	Pinkish	Pink
Mid	Reddish	Red
Dark	Yellowish	Yellow
	Orangeish	Orange
	Brownish	Brown
	Greenish	Green
	Bluish	Blue
	Greyish	Grey
		White
		Black

GUIDE 3: PERCENTAGE OF INCLUSIONS

Use the following guide to help judge the percentage of inclusions in the spit.



1

Site Code:		Test Pit number:	

SPIT RECORD FORM

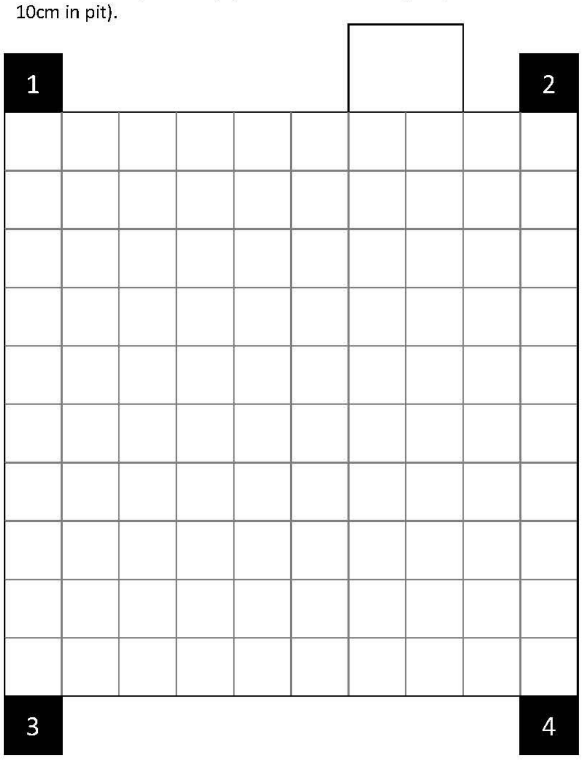
Spit recorded by: | | **Spit number:** 1

1. What depth is the surface of the top of this spit at the four corners of your test pit (numbered in black boxes below)?

1	0cm	2	0cm	3	0cm	4	0cm

2. Make a measured, labelled plan of this spit in the gridded square below (1cm on paper = 10cm in pit).

3. Draw an arrow in the box below pointing in the direction of North on your plan.



4. Describe what you've drawn on the plan. Add any notes which help explain what you have shown on your plan.

5. What was the soil composition of this spit? Use **GUIDE 1** on page 1.

6. What colour was this spit? Use **GUIDE 2** on page 1.

7. What was in this spit (apart from finds)? Write non-listed inclusions into blank rows if necessary. **GUIDE 3.**

	Present y/n	%	Inclusion size (tick all boxes that apply)			
Stone			Flecks	Small	Med	Large
Charcoal			Flecks	Small	Med	Large
Sand			Flecks	Small	Med	Large
Clay			Flecks	Small	Med	Large
Roots			Flecks	Small	Med	Large
			Flecks	Small	Med	Large
			Flecks	Small	Med	Large
			Flecks	Small	Med	Large

8. What finds were in this spit? Tick the relevant boxes and/or list any other finds in the space below.

None		Pottery	
Glass		Metal	
Flint		Bone	
Building material		Shell	

RECORDING CHECKLIST	
Task:	**Tick when completed:**
Draw plan of layer **BEFORE** starting to dig it.	
Dig spit, sieve spoil, keep and record finds (record percentage sieved).	%
Place finds in clearly labelled bag (write site code, test pit number and spit number on bag).	
Fill in **ALL** of this **SPIT RECORD FORM**.	

Site Code:		Test Pit number:	

FINAL SPIT RECORD FORM

Spit recorded by:

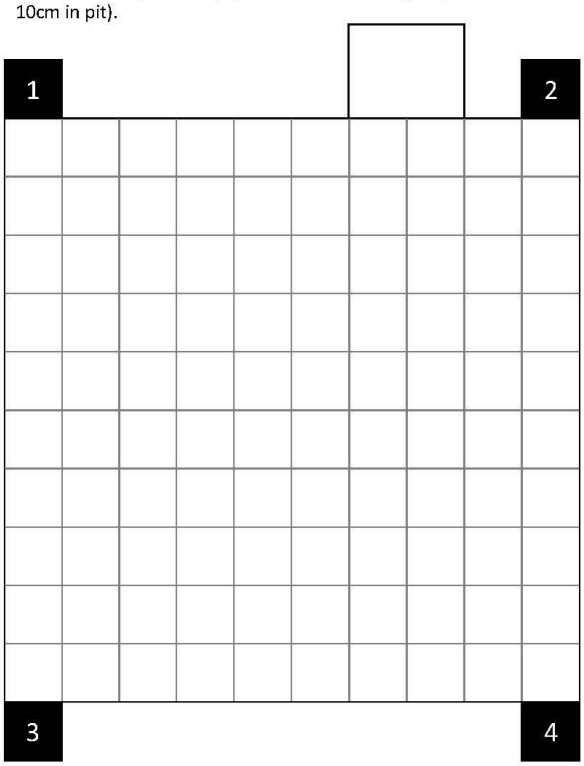
Spit number:

1. What depth is the surface of the top of this spit at the four corners of your test pit (numbered in black boxes below)?

1	2	3	4

2. Make a measured, labelled plan of this spit in the gridded square below (1cm on paper = 10cm in pit).

3. Draw an arrow in the box below pointing in the direction of North on your plan.



4. Describe what you've drawn on the plan. Add any notes which help explain what you have shown on your plan.

5. Did you excavate your test pit to natural? If not, explain why you stopped digging.

6. How well did your test pit go? What do you think it revealed? Did you have any problems digging the pit which might affect the results? Use this space to record any thoughts that might be useful when writing up the excavation.

RECORDING CHECKLIST	
Task (complete all of these BEFORE backfilling the test pit):	**Tick when completed:**
Photograph your finished pit (make sure the photograph has your test pit number, a scale and a north arrow).	
Draw plan of the bottom of the test pit.	
Complete section drawings of all four sides of your test pit.	
Ensure all finds are in clearly labelled bags (write site code, test pit number and spit number on bag).	
Fill in **ALL** of this **FINAL SPIT RECORD FORM**.	

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Site Code:		Test Pit number:	

SECTION DRAWINGS FORM

Sections recorded by:

Make a measured, labelled section of each side of your test pit in the gridded squares below (1cm on paper = 10cm in pit).

1	Ground level	2

2	Ground level	4

4	Ground level	3

3	Ground level	1

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Site Code:		Test Pit number:	

TEST PIT LOCATION MAP

Map drawn by:

Make an annotated sketch plan of the test-pits location.

- Show where the test-pit is in relation to features such as houses, boundaries, roads, walls etc. These need to be features that can be found on an Ordnance Survey map.
- Include lines showing the exact distances from the test-pit to permanently identifiable points such as buildings or field corners.
- Draw your test-pit as a square with the corners numbered 1-4, to correlate with the numbers on each spit plan.
- Draw an arrow showing the direction of North on your map.
- **REMEMBER:** Your plan needs to be understandable to someone who doesn't know the site.

SUPERVISOR'S CHECKLIST		NAME:	
TASK	**COMPLETED**	**TASK**	**COMPLETED**
All spit sheets completed		Test Pit located with GPS	
Section drawings completed		Test Pit backfilled	
Location map completed		Loaned equipment returned	
Post-excavation photograph taken		Test Pit record form and finds handed in	
All finds bagged and labelled		**SIGNED OFF:**	

Appendix 5 Reporting Finds

If you've found something that you think might be an archaeological object, or indeed Treasure, please read the advice from the Portable Antiquities Scheme at **Advice for finders of archaeological objects including Treasure** ↪[21].

Who you can report to

If you find something, whether a single item, group or a scatter, do consider whether it is better to take scaled photographs, notes and a sketch, and then seek advice, leaving the artefacts where they are while recording as exact a location as possible. Remember that memory can fade quickly too. In any respect, notes (and photographs) should be taken about the context of a find. Collecting or selectively removing artefacts will remove them from their context – key to their research value – which means important information may be lost. Any finds, by law, belong to the landowners. For Eston Hills that is Redcar & Cleveland Borough Council and the farmers who own and manage agricultural land.

Chance finds can be reported to the regional **Portable Antiquities Scheme** ↪[22] (PAS) finds liaison officer (FLO) who often hold regional open-sessions too, and/or a local **Historic Environment Record** ↪[23] (HER). You might need to be patient since these experts are often extremely busy and many thousands of finds are reported. HER records are more extensive and site-contextual, and are also far more detailed about locations and related GIS mapping (Geographical Information Systems). Reporting finds applies both to new projects and existing collections, and includes archaeology (usually stone tools), deposits and palaeo-environmental sites. In addition to supporting research, whether community-based or academic, HERs are used to inform decision makers as part of the local and national planning process for development proposals and infrastructure projects that may affect the historic environment, such as residential, commercial, utilities, transport, windfarms, and so on.

Metal detecting

Many of the archaeological sites on the Eston Hills are protected (scheduled) ancient monuments under UK law. Metal detecting, while a useful component of archaeological surveying, is also potentially destructive. Removing any finds from their context removes their value in understanding our shared past. The same standards and ethical recording practices apply to this technique as they do to all other archaeological practices.

heritage lottery fund

ICE & FIRE

ICE AND FIRE is an ongoing community rescue archaeology project, generously funded by a grant from Heritage Lottery North-East. It also enjoys support from multiple organisations, to assess, sample and rescue over 10,000 years of archaeology-at-risk, but also to pull together the many stakeholders across the community to focus on sustainable solutions.

The project has made excellent progress in its first season, rallying many voices around a single 'landscape' community cause. The aim is to turn around perceptions and behaviour, across generations and backgrounds, to make the destruction by a minority of residents socially unacceptable.

estonhillsproject.wordpress.com

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